



HERCULES GENERAL PLAN

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THE GENERAL PLAN

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GENERAL PLAN ELEMENT
OF THE GENERAL PLAN

I .

APPROVED BY THE CITY COUNCIL

I. THE GENERAL PLAN

A. AUTHORITY

Government Code Section 65302 requires a general plan statement as follows:

"The general plan shall consist of a statement of development policies and shall include a diagram or diagrams and text setting forth objectives, principles, standards and plan proposals."

B. BACKGROUND

1. Historical Sketch

The City was incorporated as the Town of Hercules in 1900 and is a general law city of the State of California. The City is governed by a council of five members elected at large.

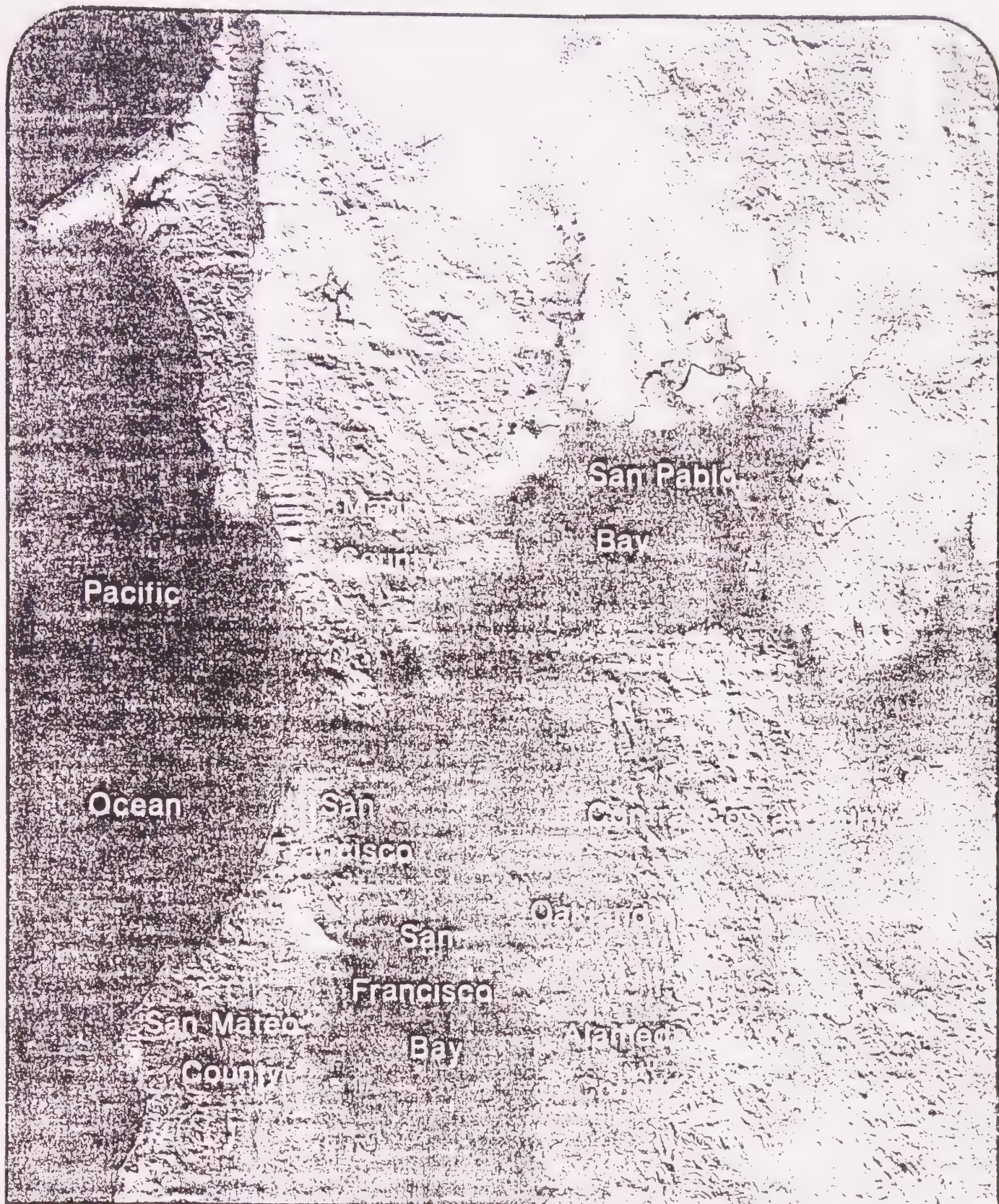
The "Hercules Site" of the California Powder Works was established in 1879. Originally occupying a site in what is now Golden Gate Park in San Francisco, the company decided to find another location and selected a tract of land in San Pablo Bay which was a part of the former Spanish land grant called Rancho El Pinole. In about 1903, the DuPont company acquired the California Powder Works and thereafter the plant comprised part of the E. I. DuPont de Nemours organization. In 1912, the Hercules Powder Company was incorporated (now known as Hercules Incorporated) and purchased the Hercules, California plant from the DuPont company together with other explosive plants operated by the DuPont company in other states. The Hercules, California plant was the largest producer of TNT in World War I supplying explosives to Great Britain, France and Russia before the United States entered the war.

Several of the houses in the old village area were built prior to 1900, with the majority erected during World War I. In 1902, the Hercules Water Company was formed to supply water to the area between San Pablo and Rodeo. This company operated until 1953 when it became a part of East Bay Municipal Utility District. In 1975, construction of new housing began east of I-80. This marked the beginning of new Hercules. In 1978, Hercules, Inc. sold the plant and ended almost a hundred years of activity in the City.

2. Regional Considerations

a. The Bay Area

The City is located in the western portion of Contra Costa County, one of the nine counties comprising the San Francisco Bay Area. See Figure 1.



SAN FRANCISCO BAY AREA

Source: NASA

The City is in the path of growth in the Bay Area - accessible by freeway to employment areas in West Contra Costa County, Northern Alameda County and the Benicia area. There is a Bay Area Rapid Transit (BART) station in Richmond, nine miles south of Hercules, which provides West Contra Costa County with mass transit service to destinations along the industrial corridor between the cities of Richmond and Fremont and the City of San Francisco.

The City of Hercules is a planned community which is an extension of an urbanized area already served by major transportation and utility systems. See Figure 2. The plan incorporates open space and conservation areas and provides for improved environmental design. The City has the governmental framework to provide its future citizens with needed urban services. Development of housing in Hercules, coupled with growth in the unincorporated area of Rodeo and the City of Pinole, made West Contra Costa County one of the fastest growing areas in the 1970's.

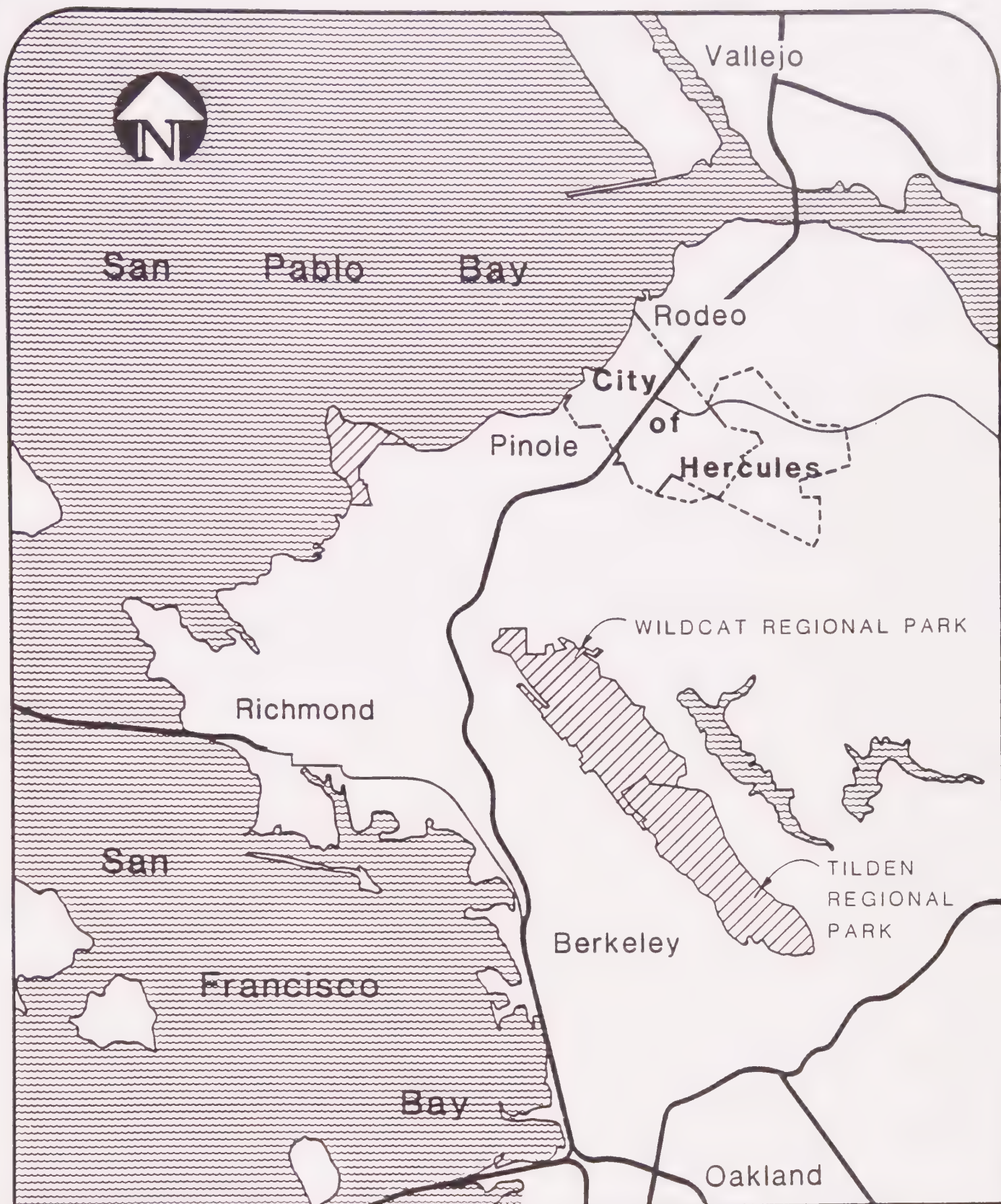
b. Spheres of Influence

There are 1,365 acres of land outside of the City that has been deemed within the City's sphere of influence by the Local Agency Formation Commission. These areas are indicated in Figure 3.

C. OBJECTIVES AND POLICIES

1. General Plan Objectives

- a. Provide a functional and compatible arrangement of residential, commercial, industrial, public uses and open spaces.
- b. Provide for an economic base capable of supporting adequate community services in future years.
- c. Provide for the movement of people and commodities in the City.
- d. Plan for the preservation and enhancement of visual qualities as viewed from scenic routes.
- e. Provide for both human and environmental needs in creating a natural environment compatible with urban development by the wise use and enhancement of natural resources within the City.
- f. Reduce loss of life, injuries, damage to properties and economic and social dislocations resulting from future seismic, geologic and fire hazards.
- g. Protect the future citizens of Hercules from excessive noise levels which are annoying to the senses and can be detrimental to health.



AREA MAP

figure 2

PLANNING AREA

LEGEND



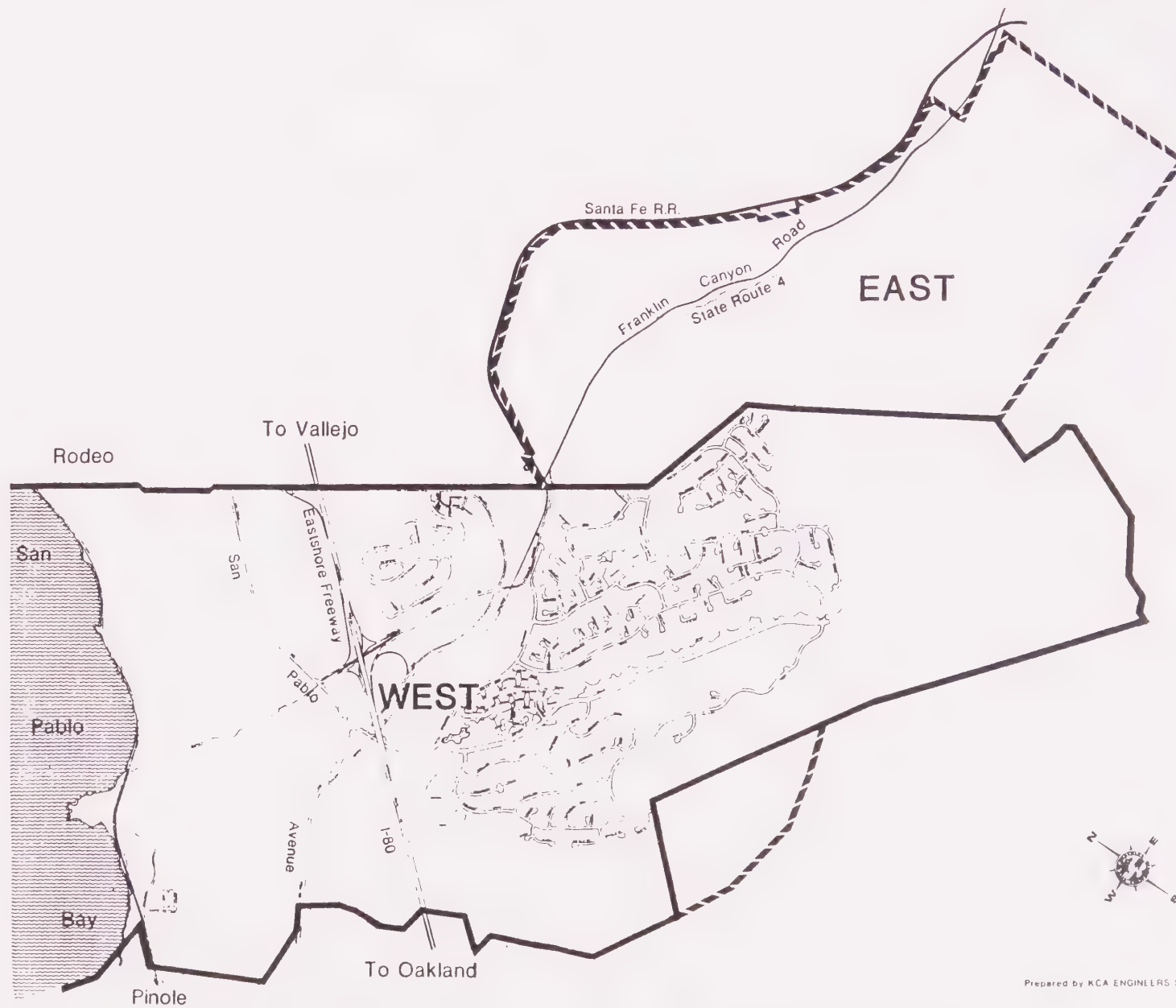
EXISTING CITY LIMITS



HERCULES SPHERE OF INFLUENCE

GENERAL PLAN

CITY OF HERCULES,
CALIFORNIA



2. General Plan Policies

- a. The City will be developed as an extension of an urbanizing area with a balance of residential, commercial, industrial and public uses.
- b. Specific plans will be prepared for a neighborhood prior to development within that neighborhood.
- c. Densities shown on the General Plan are flexible and may be modified as neighborhood plans are formulated.
- d. The City will encourage innovation in site planning and design of housing developments to improve livability and effect cost savings.
- e. A major criteria for the design of residential streets will be the number of housing units to be served by that street.
- f. The City will actively participate in cooperative efforts to provide effective public transit to the City and adjacent communities.
- g. The City will promote the establishment of riding and hiking trails throughout the community and coordinate with other agencies in the planning of trail systems in the area and region.
- h. The City will establish a management program for the conservation and enhancement of the natural amenities in the City.
- i. Neighborhood planning will consider potential seismic, geologic and fire hazards and introduce adequate safety measures in development plans and proposals.
- j. The City will consider noise intrusion from major streets and freeways in reviewing plans for new housing developments.

3. The Plan






The General Plan represents a balance of residential, commercial, industrial and public uses as shown in Figures 4 and 5.

The distribution of major land uses is shown in Table 1, and Table 2 shows a distribution of housing units by classification.

LAND USES

LEGEND

RESIDENTIAL

-  LOW DENSITY
-  MED-LOW DENSITY
-  MEDIUM DENSITY
-  MEDIUM HIGH DENSITY
-  HIGH DENSITY

PUBLIC

-  CIVIC CENTER
-  HIGH SCHOOL
-  JUNIOR HIGH
-  ELEMENTARY
-  MULTI-PURPOSE

CIRCULATION

-  FREEWAYS
-  STREETS
-  RAILROADS

PARKS-OPEN SPACE

-  COMMUNITY PARK
-  NEIGHBORHOOD PARK
-  WATERFRONT PARK
-  OPEN SPACE

COMMERCIAL

-  TOWN CENTER
-  SERVICE
-  HIGHWAY
-  INDUSTRIAL
-  NEIGHBORHOOD

INDUSTRIAL

-  INDUSTRIAL

OTHER

-  HISTORIC DISTRICT






GENERAL PLAN

CITY OF HERCULES,
CALIFORNIA




LAND USES

LEGEND

RESIDENTIAL

-  LOW DENSITY
-  MED-LOW DENSITY
-  MEDIUM DENSITY
-  MEDIUM HIGH DENSITY
-  HIGH DENSITY

PUBLIC

-  CIVIC CENTER
-  HIGH SCHOOL
-  JUNIOR HIGH
-  ELEMENTARY
-  MULTI-PURPOSE

CIRCULATION

-  FREEWAYS
-  STREETS
-  RAILROADS

PARKS-OPEN SPACE

-  COMMUNITY PARK
-  NEIGHBORHOOD PARK
-  WATERFRONT PARK
-  OPEN SPACE

COMMERCIAL

-  TOWN CENTER
-  SERVICE
-  HIGHWAY
-  INDUSTRIAL
-  NEIGHBORHOOD

INDUSTRIAL

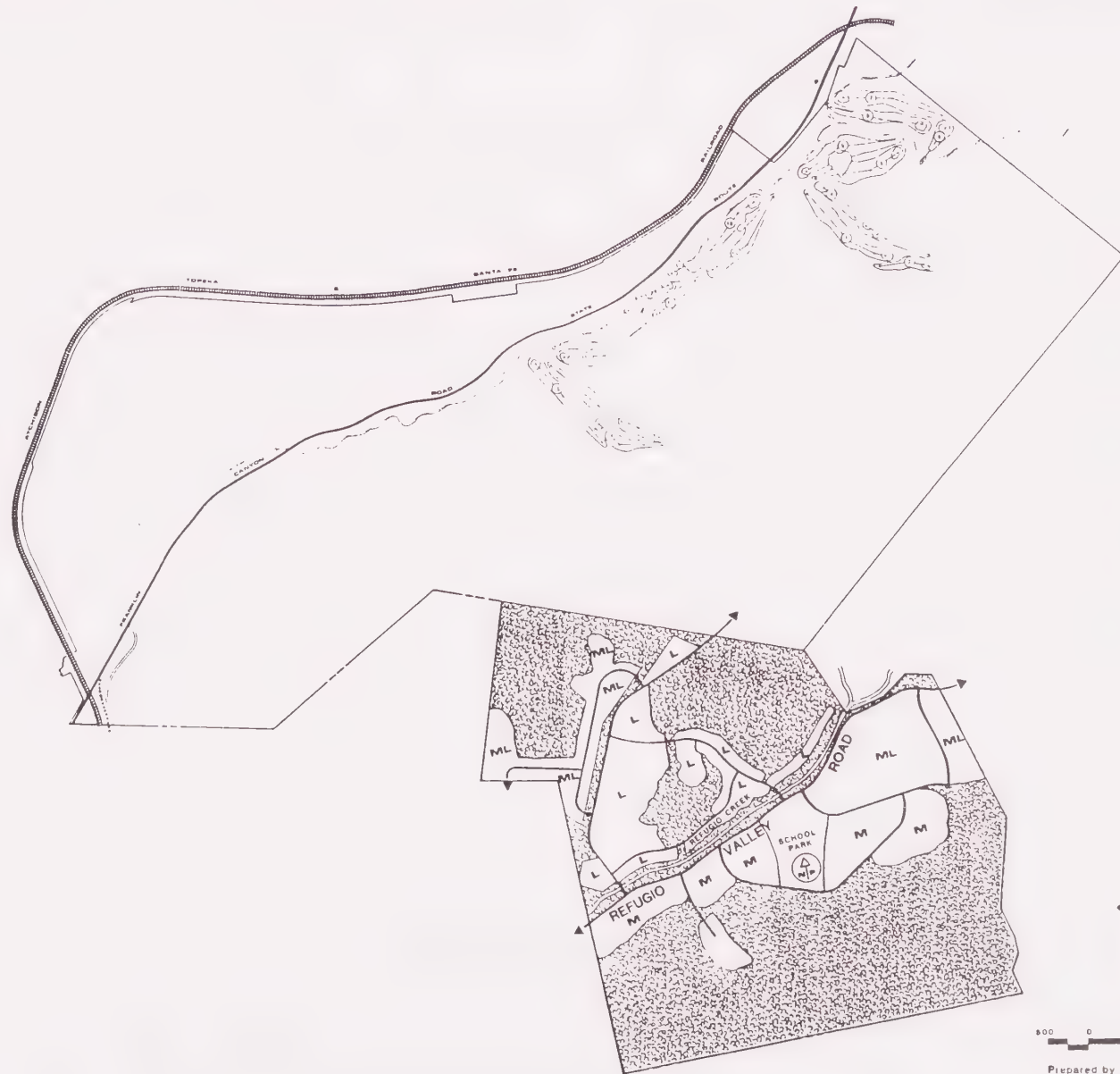
-  INDUSTRIAL

OTHER

-  HISTORIC DISTRICT

GENERAL PLAN

CITY OF HERCULES,
CALIFORNIA



500 0 500 1000 1500 2000 2500 FEET

Prepared by KCA ENGINEERS San Francisco

Table 1
1990 Distribution of Major Land Uses

| <u>Classification</u> | <u>Acres</u> | <u>% of Total</u> |
|-----------------------|---------------|-------------------|
| Residential | 1304.3 | 4.1% |
| Commercial | 140.6 | 4.4 |
| Industrial | 568.5 | 17.9 |
| Multi-purpose | 49.0 | 1.5 |
| Public Buildings | 99.6 | 3.1 |
| Parks and Open Space | <u>1014.6</u> | <u>32.0</u> |
| Total Land Use | 3176.6 | 100.0% |

Table 2
1990 Distribution of Housing Units by Classification

| <u>Classification</u> | <u>Average Density</u> | <u>Residential Acres</u> | <u>Housing Units</u> |
|-----------------------|------------------------|--------------------------|----------------------|
| Low | 3.9 | 805.4 | 3,142 |
| Medium Low | 3.2 | 134.0 | 435 |
| Medium | 7.8 | 273.4 | 2,144 |
| Medium High | 13.2 | 88.0 | 1,160 |
| High | <u>24.0</u> | <u>3.5</u> | <u>84</u> |
| Total Residential | 5.3 | 1,304.3 | 6,965 |

D. IMPLEMENTATION

1. Preparation and review of neighborhood plans, specific plans, functional plans and other special studies leading to short and intermediate range implementation programs.
2. Review community development ordinances and policies in terms of compatibility with the objectives, standards and policies contained in the General Plan.
3. Review of the capital improvement program in terms of General Plan proposals staging and priorities.
4. Review of development plans in terms of conformity to the General Plan.
5. Enforcement of community development and safety codes to implement the objectives of the General Plan.
6. Coordination with local, State and Federal agencies on General Plan policies and programs of Regional or area-wide interest.
7. Utilization of special assessment districts and other available means of financing capital improvements.

LAND USE ELEMENT

LAND USE ELEMENT
OF THE GENERAL PLAN

II .

APPROVED BY THE CITY COUNCIL

II. THE LAND USE ELEMENT

A. AUTHORITY

Government Code Section 65302(a) requires a land use element of all city and county general plans, as follows:

"A land use element which designates the proposed general distribution and general location and extent of the uses of the land for housing; business; industry; open space, including agriculture, natural resources, recreation and enjoyment of scenic beauty; education; public buildings and grounds; solid and liquid waste disposal facilities; and other categories of public and private uses of the land."

B. RESEARCH AND ANALYSIS

1. Population Growth

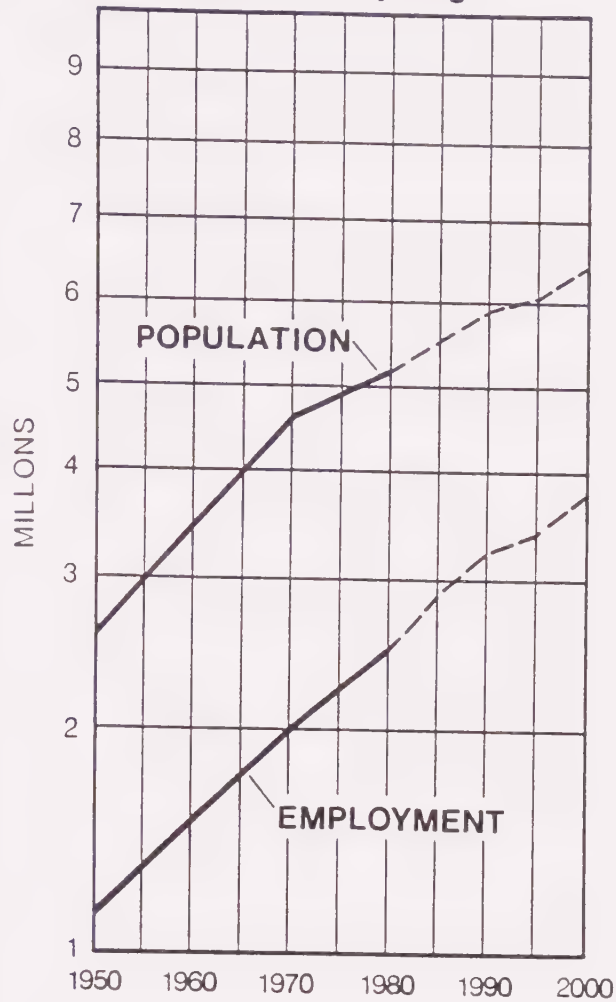
Table 3 contains population growth from 1950 to 1980 for Hercules, Contra Costa County and the San Francisco Bay Area. Beginning in 1975, Hercules grew at a rapid rate, as illustrated.

Table 3
Population Growth

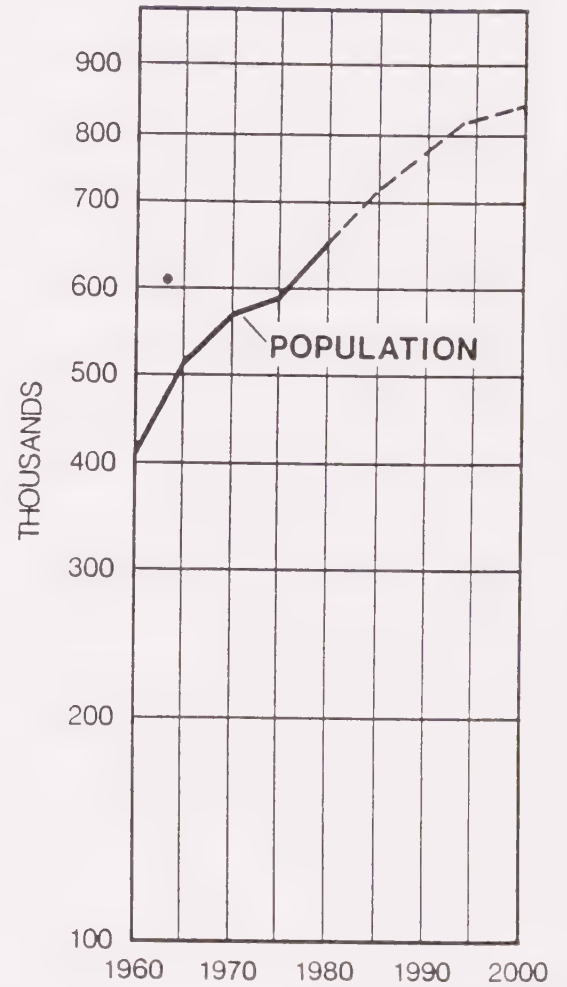
| | <u>1950 Population</u> | <u>1960 Population</u> | <u>1970 Population</u> | <u>1980 Population</u> | <u>Increase (Decrease)</u> |
|---------------------------|----------------------------|----------------------------|----------------------------|----------------------------|--------------------------------|
| California | 10,586,223 | 15,717,204 | 19,953,134 | 23,667,902 | 19% |
| San Francisco Bay Area | 2,681,322 | 3,638,939 | 4,628,199 | 5,179,784 | 12% |
| Contra Costa County | 298,984 | 409,030 | 558,339 | 656,380 | 18% |
| Hercules | 343 | 310 | 252 | 5,963 | 2,266% |

Projections for future growth vary widely for Contra Costa County and the Bay Region, depending on growth assumptions. Figure 6 shows Bay Area growth estimates for population and employment to the year 2,000, prepared by the Association of Bay Area Governments. Figure 6 also shows population estimates to the year 2,000 for Contra Costa County. The City of Hercules is expected to have a population of 19,428 in 1990.

San Francisco Bay Region



Contra Costa County



POPULATION & EMPLOYMENT FORECASTS

figure 6

2. Natural Physical Factors

a. Topography

Lands covered by the General Plan are characterized by gentle to steep grass-covered hills with trees clustered in the water courses and on some of the hillsides. The higher elevations provide panoramic views of San Pablo Bay.

Topographic relief consists of a series of northwest trending ridges which have a maximum elevation nearing eight hundred feet, and which decrease in elevation northwesterly toward lowlands adjoining San Pablo Bay. Side slopes have been eroded by numerous steep-sided gullies emptying into narrow valleys which widen as they drain northwesterly into San Pablo Bay.

b. Drainage

The General Plan indicates three major drainage basins. Refugio Creek drains the bulk of the City while Rodeo and Pinole Creeks drain smaller areas. Rodeo Creek runs parallel to the northeast City boundary in unincorporated territory. Pinole Creek is located adjacent to the City of Pinole boundary draining about 150 acres of the City between San Pablo Avenue and the Bay. This reach of Pinole Creek is a tidal waterway which has been improved and realigned by the Corps of Engineers. The lower reaches of Refugio and Pinole Creeks sometimes experience shallow flooding.

c. Geology

Preliminary geological studies for the General Plan area indicate that the lands are suitable for urban uses. Several fault traces have been mapped in the City, however, no physical evidence has been found to verify their actual experience.

d. Vegetation

Remaining vegetation within the City consists predominantly of open grasslands with scattered growths of trees and pockets of dense brush concentrated along the valleys and on certain side slopes.

e. Wildlife

As the City develops and open space areas are established, wildlife of each area has and will continue to migrate and disperse to the remaining lands. Species will re-establish themselves dependent on the location and composition of habitat types.

f. Soils

With few exceptions, the soils in the City are unsatisfactory for crop production according to information provided by the U.S. Department of Agriculture, Soils Conservation District.

C. LAND USE POLICIES AND PROPOSALS

1. Objectives

- a. Provide a functional and compatible arrangement of residential, commercial, industrial, public uses and open space.
- b. Provide a land use pattern coordinated with other systems such as traffic circulation, schools, parks and utilities.
- c. Encourage creative land planning and urban design.
- d. Minimize land use conflicts.
- e. Maintain the natural character of the City.
- f. Provide for a desirable life-style for residents.
- g. Provide for an economic base capable of supporting adequate community services in future years.

2. Land Use Policies

- a. The City will be developed as an extension of an urbanizing area.
- b. The City will have a balance of residential, commercial and industrial uses.
- c. Innovative site planning will be encouraged.
- d. Specific plans will be prepared for a neighborhood prior to development within the neighborhood.
- e. Densities shown on the General Plan are flexible and may be modified as neighborhood plans are formulated.
- f. Site development standards will be flexible to effect cost savings where possible to provide moderate-priced housing. Environmental quality, adequate engineering design and long-term neighborhood stability will always be considered in the modification of development standards.
- g. Areas subject to potential periodic flooding will be developed only where improvements would be raised above the grade of the flood plain or acceptable drainage facilities were provided.

3. Land Use Proposals and Standards

a. Developable Land

Of the total area of the General Plan, about 35%, or 4,551.3 acres, are developable for urban land uses. The remainder consists of baylands or various major transportation facilities.

Table 4
Developable Lands

| | <u>Acres</u> | <u>% of Total</u> |
|------------------------------|----------------|-------------------|
| Developable Lands | 4,551.3 | 34.9% |
| Transportation Facilities | 340.0 | 2.6% |
| Baylands | <u>8,140.0</u> | <u>62.5%</u> |
| Total City | 13,031.3 | 100.0% |

b. Land Use Summary

Table 5 provides a detailed breakdown of the 1990 land use allocation, in acres, for land use in the General Plan by study area. See Figures 7 and 8.

(Table 5 follows this page)

c. Distribution of Major Land Uses

Table 6 contains the land use distribution for major land use categories, by acres and percentage of developable land in the City.

Table 6
Developable Lands






| <u>Land Use Classification</u> | <u>Acres</u> | <u>% of Total</u> |
|------------------------------------|----------------|-------------------|
| Residential | 1,304.3 | 41.1% |
| Commercial | 140.6 | 4.4% |
| Industrial | 568.5 | 17.9% |
| Multi-purpose | 49.0 | 1.5% |
| Public Buildings | 99.6 | 3.1% |
| Parks and Open Space | <u>1,014.6</u> | <u>32.0%</u> |
| Total City | 3,176.6 | 100.0% |

Table 5
Hercules 1990 Land Allocation Summary in Acres

| Areas | Residential | Commercial | Industrial | Schools | Parks | Open Space | Civic Center | Multi- Purpose | Totals |
|--------|-------------|---|------------|---------|-------|---------------|-----------------|-------------------|---------|
| 1 | 379.0 | - | - | 10.0 | 25.0 | 145.0 | - | - | 559.0 |
| 2 | - | 46.0 | - | - | - | 4.0 | 15.0 | - | 65.0 |
| 3 & 4 | 371.3 | 12.3 | - | 9.2 | 11.0 | 100.0 | - | - | 703.8 |
| 5 | 88.0 | - | - | - | - | 12.0 | - | - | 100.0 |
| 6 | 125.5 | 14.2 | - | 55.4 | 18.6 | 20.5 | - | - | 234.2 |
| 7 | - | 53.3 | 568.5 | - | - | 13.0 | - | - | 634.8 |
| 8 | 95.9 | 3.0 | - | - | 3.6 | 26.0 | - | - | 128.5 |
| 9 | - | - | - | - | - | - | - | 49.0 | 49.0 |
| 10 | 204.0 | - | - | 10.0 | 5.0 | 370.0 | - | - | 589.0 |
| 11 | 40.6 | - | - | - | - | 60.9 | - | - | 124.0 |
| 12 | - | S p h e r e o f I n f l u e n c e A r e a | | | | | | - | 627.0 |
| 13 | - | S p h e r e o f I n f l u e n c e A r e a | | | | | | - | 306.0 |
| 14 | - | S p h e r e o f I n f l u e n c e A r e a | | | | | | - | 431.0 |
| Totals | 1,304.3 | 140.6 | 568.5 | 84.6 | 63.2 | 951.4 | 15.0 | 49.0 | 4,551.3 |

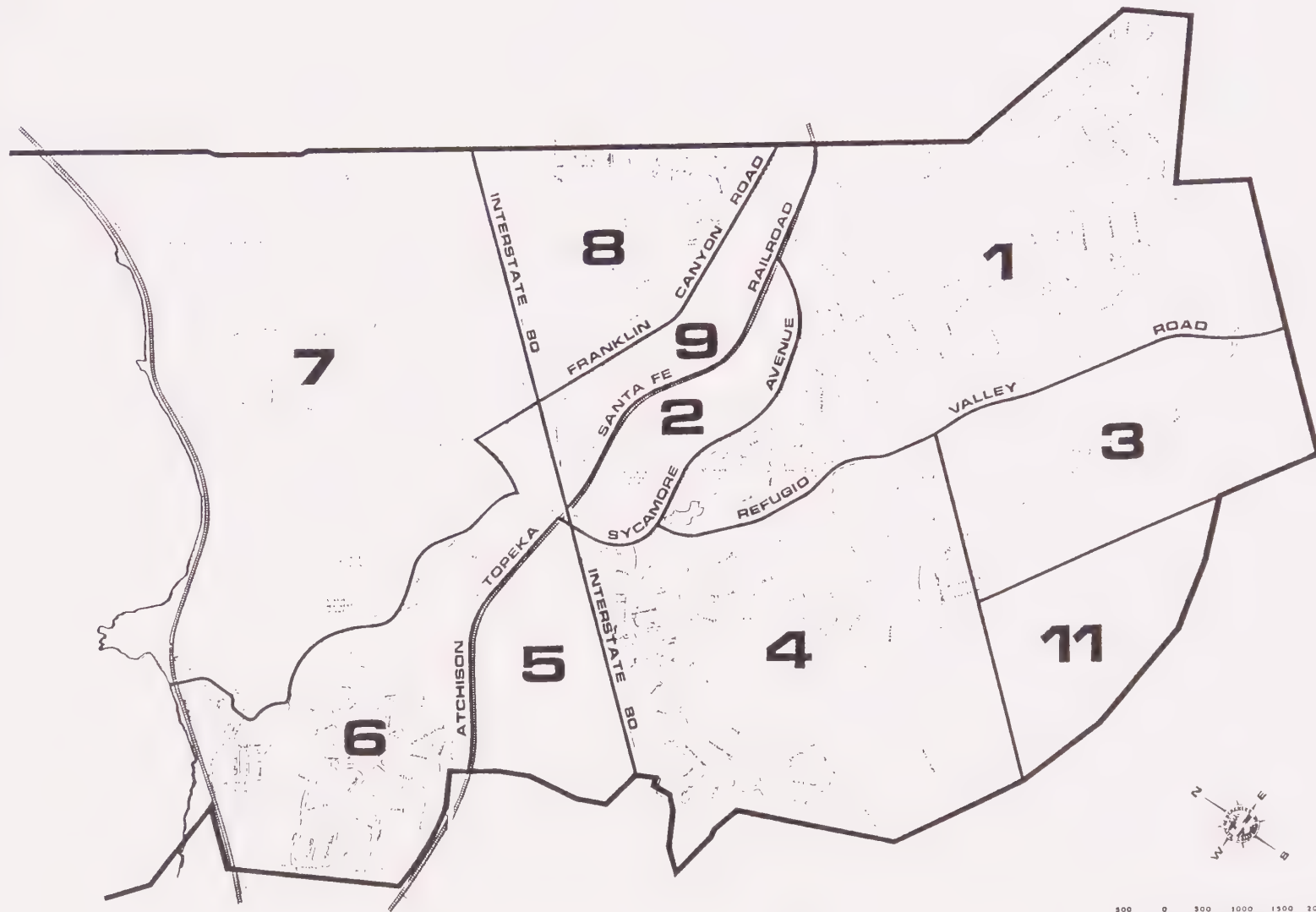
STUDY AREAS

LEGEND

-  CITY BOUNDARY
-  NEW SPHERE OF INFLUENCE BOUNDARY
-  NEIGHBORHOOD BOUNDARY
-  EXISTING NEIGHBORHOOD AREA
-  FUTURE NEIGHBORHOOD AREA

GENERAL PLAN

CITY OF HERCULES,
CALIFORNIA



Prepared by KCA ENGINEERS San Francisco

STUDY AREAS

LEGEND



CITY BOUNDARY



NEW SPHERE OF INFLUENCE BOUNDARY



NEIGHBORHOOD BOUNDARY

2

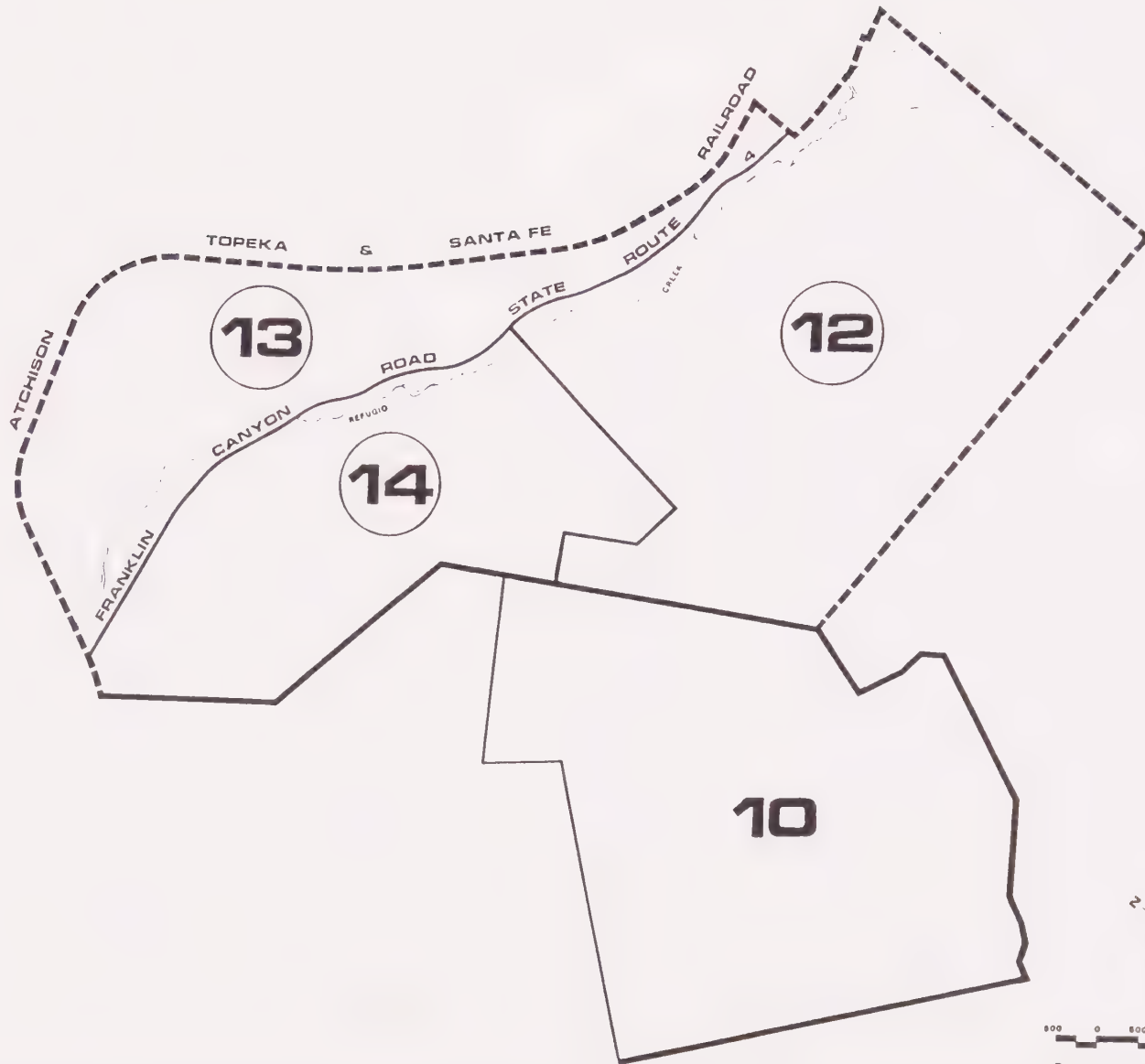
EXISTING NEIGHBORHOOD AREA



FUTURE NEIGHBORHOOD AREA

GENERAL PLAN

CITY OF HERCULES,
CALIFORNIA



0 500 1000 1500 2000 2500 FEET

Prepared by KCA ENGINEERS San Francisco

1) Residential Development

Residential uses comprise about 1,304.3 acres or about 41.1% of developable land. Table 7 provides a breakdown of residential home acres by classification.

Table 7
Distribution of Land by Classification

| <u>Classification</u> | <u>Density</u> | <u>Residential Acres</u> | <u>% of Total Acres</u> |
|-----------------------|----------------|------------------------------|-----------------------------|
| Low | 3.9 | 805.4 | 61.7% |
| Medium Low | 5.0 | 87.8 | 6.7% |
| Medium | 8.0 | 319.6 | 24.5% |
| Medium High | 13.2 | 88.0 | 6.8 |
| High | <u>24.0</u> | <u>3.5</u> | <u>0.3%</u> |
| Total Residential | 5.2 | 1,304.3 | 100.0% |

For a detailed description of residential classifications and distribution of housing units in the City, please refer to the Housing Element.

2) Commercial Development

About 4.4% of developable land, or 140.6 acres, is devoted to various commercial use. Most of the commercial acreage is in the City Center area (58.3 acres). The remaining commercial lands are devoted to neighborhood highway, service commercial and industrial commercial uses.

3) Industrial Development

About 17.9% of developable land, or 568.5 acres, are devoted to industrial uses. Within this area are the Hercules Properties, Ltd. plant facilities, the Pacific Refinery and undeveloped industrial sites. These properties, when fully developed, will provide the future residents of the City with employment opportunities and provide a tax base to support adequate community services.

4) Multi-purpose Uses

A multi-purpose corridor comprising 49.0 acres is proposed for future public, semi-public and service uses. A PG&E substation and a California State Division of Highways maintenance yard are presently located in the corridor.

5) Public Buildings

The 99.6 acres allocated to Public Buildings includes a Civic Center (15 acres), five elementary schools (38.6 acres), and a junior high/high school site (46.0 acres).

6) Parks and Open Space

Almost 32% of developable land is devoted to open space and parks. Open space amounts to 1,014.6 acres and active neighborhood and community parks account for 63.2 acres.

D. IMPLEMENTATION

1. Neighborhood plans, specific plans, functional plans, and other special studies leading to short and intermediate-range implementation programs.
2. Control of land development through consistent zoning policies.
3. Subdivision ordinances, site development regulations, building code, and other community development regulations.
4. Annual review of areas subject to flooding.
5. Review of development proposals.
6. Review of the capital improvement program.
7. Code enforcement.
8. Public acquisition.

CIRCULATION/SCENIC HIGHWAY ELEMENT

CIRCULATION ELEMENT
OF THE GENERAL PLAN

APPROVED BY THE CITY COUNCIL
OCTOBER 5, 1988

III. THE CIRCULATION/SCENIC HIGHWAY ELEMENT

A. AUTHORITY

1. Circulation

Government Code Section 65302 (b) requires a Circulation Element in all City and County General Plans, as follows:

"A circulation element consisting of the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other local public utilities and facilities, all correlated with the Land Use Element of the Plan."

B. RESEARCH AND ANALYSIS

1. Introduction

The Circulation and Scenic Highway Element is concerned with: 1) the movement of people and commodities (including energy) through the City; and, 2) local planning for scenic highways in the City.

The Land Use Element and the Circulation Element of the General Plan must work together so that the land use impacts and needs and the circulations/transportation system capability are coordinated. Projections of the traffic which will be generated by future development are the basis for the planned circulation system improvements in the Circulation Element.

This section will summarize and analyze background data relating to:

- a. Traffic circulation
- b. Scenic routes
- c. Public transit
- d. Riding and hiking trails
- e. Transmission lines and fuel lines
- f. Other transportation facilities
- g. Traffic study areas
- h. Traffic mitigation project

2. Traffic Circulation

a. Area-wide Circulation

The City is served by two major freeways, Interstate Route 80 and State Highway 4. I-80 provides access to the San Francisco Bay Area,

Sacramento and to the western states. Route 4 connects I-80 with the Sacramento delta and central Contra Costa County. See Figures 10 and 11.

I-80 is presently six lanes and the Department of Transportation is considering an expansion to an eight-lane facility with possibly a future expansion of Bay Area Rapid Transit (BART) system paralleling I-80 in the Hercules area. Route 4 is partly a freeway and partly a two-lane highway between I-80 and Martinez, and is planned for expansion to a six-lane freeway. Several existing ramp connections to these two freeways serve the City via Willow Avenue, San Pablo Avenue, and Bayberry. San Pablo Avenue provides a connection to communities north and south of Hercules and serves as a by-pass for I-80 when freeway traffic is congested.

b. Local Circulation

CITY-WIDE TRAFFIC STUDY

In March, 1987, a "City-wide Traffic Study" was prepared by JHK & Associates, consulting traffic engineers. This study measured the existing traffic conditions throughout the City and projected traffic conditions which can be expected by the year 2000 or thereafter.

Land Use Assumptions

The focus of the study is the peak hour condition at full "Build-out" (i.e. development) of land both within the City and its sphere of influence to the east along Route 4. The "City-Wide Traffic Study" breaks the City into traffic study zones. These traffic zones are shown in Figures 9 and 9A. The projections of traffic to be generated at "Build-out" are based on land use assumptions as summarized in Table 7A.

Table 7B is a detailed breakdown of the land uses in each traffic zone. This includes both existing (1986) development and the future development that is expected to occur by the year 2000 or thereafter. The data in Tables 7A and 7B are taken from the land use designation of the present (August, 1988) General Plan and the Draft Hercules Properties/Gelsar Specific Plan (April 1988). Some of the data from the General Plan has been modified to reflect actual approvals.

TRAFFIC / PROJECTS

LEGEND



TRAFFIC STUDY ZONE PER 1987 JHK REPORT



LOCATION OF TRAFFIC MITIGATION PROJECT

GENERAL PLAN

CITY OF HERCULES,
CALIFORNIA

TRAFFIC / PROJECTS

LEGEND



TRAFFIC STUDY ZONE PER 1987 JHK REPORT



LOCATION OF TRAFFIC MITAGATION PROJECT

GENERAL PLAN

CITY OF HERCULES,
CALIFORNIA



Prepared by KCA ENGINEERS San Francisco

CIRCULATION PLAN

LEGEND

| | |
|---|---------------------|
|  | FREEWAYS |
|  | ARTERIALS |
|  | LOCAL COLLECTOR |
|  | FREEWAY INTERCHANGE |
|  | RAILROADS |
|  | SCENIC ROUTES |
|  | FUTURE HIGHWAYS |
|  | GRADE SEPERATION |

GENERAL PLAN

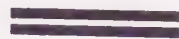






CITY OF HERCULES,
CALIFORNIA



Prepared by KCA ENGINEERS, San Francisco

CIRCULATION PLAN

LEGEND

| | |
|---|---------------------|
|  | FREEWAYS |
|  | ARTERIALS |
|  | LOCAL COLLECTOR |
|  | FREEWAY INTERCHANGE |
|  | RAILROADS |
|  | SCENIC ROUTES |
|  | FUTURE HIGHWAY |

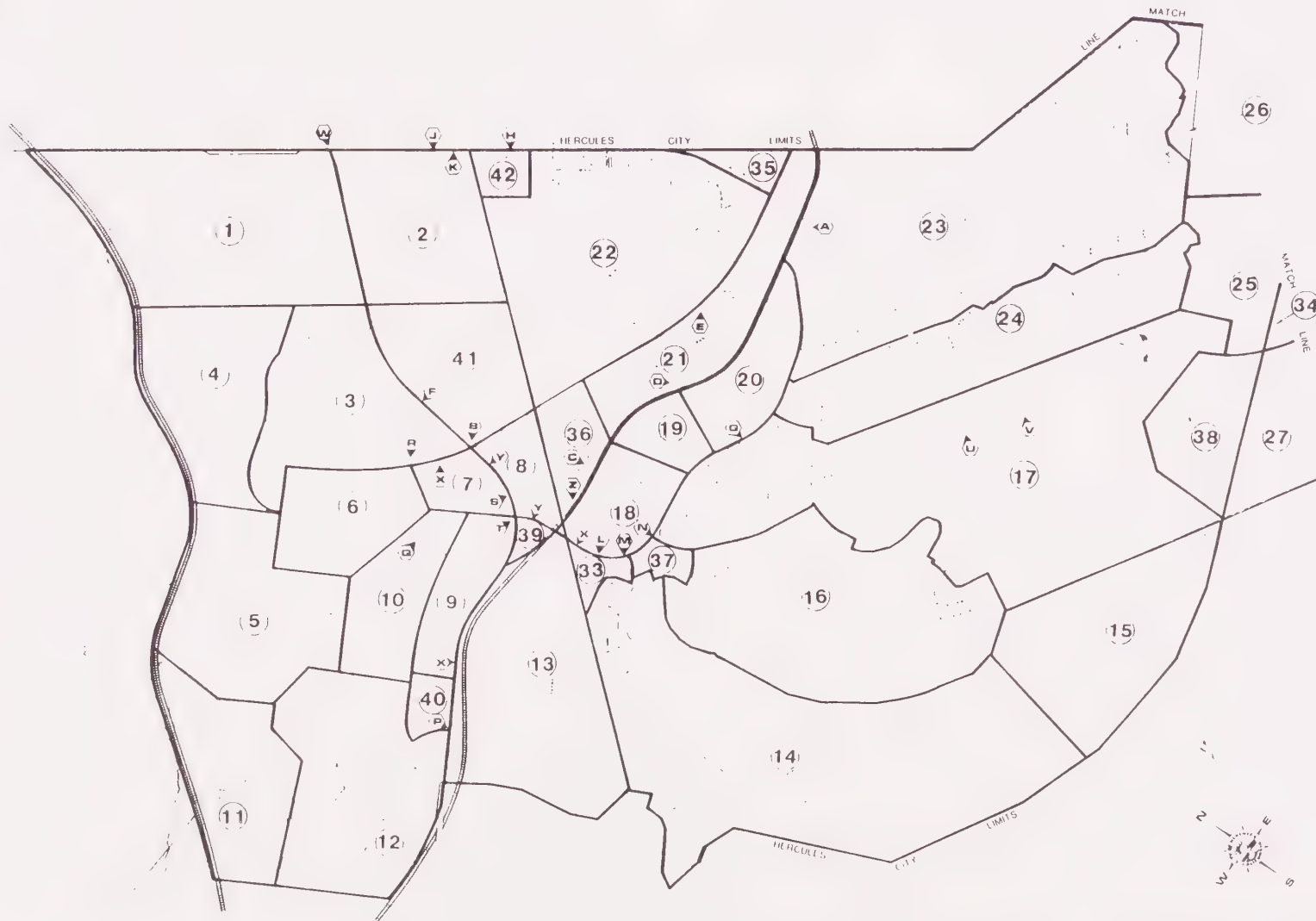
GENERAL PLAN

CITY OF HERCULES,
CALIFORNIA

THE SOUTH AFRICAN AIR FORCE

1:10,000





500 0 500 1000 1500 2000 2500 FEET

Prepared by KCA ENGINEERS San Francisco

TABLE 7A LAND USE ASSUMPTIONS

| Land Use Group | Measure | Additional | | | Total at | |
|-------------------|-----------|------------------|------------------------|---------------|--------------|---------------|
| | | Existing 1986 | Sphere of Influence | City Limit | Sub Total | Build- Out |
| Residential | Unit | 3336 | 1533 | 3453 | 4986 | 8322 |
| Hotel | Room | 0 | 300 | 300 | 600 | 600 |
| Retail Commercial | 1000 S.F. | 82 | 0 | 838 | 838 | 920 |
| Office | 1000 S.F. | 24 | 0 | 1152 | 1152 | 1176 |
| Industrial Park | 1000 S.F. | 0 | 0 | 2400 | 2400 | 2400 |
| Lt. Industrial | 1000 S.F. | 30 | 1054 | 950 | 2004 | 2034 |
| Heavy Industrial | Acre | 244 | 40 | 0 | 40 | 284 |
| Public - Offices | 1000 S.F. | 5 | 0 | 35 | 35 | 40 |
| - Schools | Students | 900 | 0 | 1600 | 1600 | 2500 |

In the 1987 Study, trip generation rates from the third edition of Trip Generation published by the Institute of Transportation Engineers were used. In 1988 the fourth edition of this book was published with revised trip generation rates. JHK Associates re-ran the model using the revised trip generation rates, and re-analyzed the most heavily-traveled intersections in the City. While the projected volume/capacity ratios changed slightly, JHK confirmed that the improvements identified in the 1987 Study will be needed to accommodate full build-out traffic at Level of Service D.

3. Transportation Improvements

Identifying the transportation improvements which must be constructed in order to achieve the City's General Plan Policy of maintaining a Level of Service D or better for peak hour traffic operating conditions is a three-step process.

First, the quantified land uses are combined with the appropriate trip generation rates in the traffic model to determine the number of peak hour trips which would be generated on roadways and at specific intersections. Secondly, the traffic model is then used to determine the Level of Service of traffic operation at intersections in the City were developed to full

ACA Engineers
Created: 2/23/04
Revised: 4/21/00
1052-A26

[illegible]

TABLE 7C
TRAFFIC MITIGATION SUMMARY
1987 DOLLARS

| Item No. | | Total Cost | Redevelopment Contrib. | Frontage Contrib./ Other Agencies | Traffic Mitigation | Remarks | Constr. Priority |
|----------|---|--------------------------|------------------------|-----------------------------------|--------------------|---|------------------|
| A | SYCAMORE AVENUE from Palm eastward 1500 LF | \$400,000 | \$100,000 | | \$300,000 | R.D.P. No. 9 | 10 |
| B | SAN PABLO/JOHN MUIR Grade Separation Signal | 6,100,000 120,000 | 500,000 | | | R.D.P. No. 13 \$500,000 expended R.D.P. No. 2 | 21 |
| | | 6,220,000 | 500,000 | | 5,720,000 | | |
| C | BAYBERRY - Sycamore to 180 Ramp | 730,000 | 150,000 | 47,000 | | R.D.P. No. 6 | 2 |
| | | | 75,000 | | | R.D.P. No. 11 | |
| | | 730,000 | 225,000 | 47,000 | 458,000 | Includes signal work | |
| D | BAYBERRY - 180 off- Ramp to Palm | 1,030,000 | 850,000 | 180,000 | | R.D.P. No. 12 | 22 |
| E | PALM-RT. 4 connect. PHASE 1 PHASE 2 | 2,370,000 2,980,000 | | | | | 3 12 |
| | | 5,350,000 | 350,000 | 373,000 | 4,627,000 | R.D.P. No. 16 | |
| F | SAN PABLO AVE | | 250,000 | | | R.D.P. No. 4 | 1 |
| | | | | | | R.D.P. No. 5 | |
| | | | 250,000 | | -250,000 | \$400,000 expended | |
| G | SYCAMORE AVE Creekside to Palm | 1,500,000 | 350,000 | 1,150,000 | | R.D.P. No. 10 | 11 |
| | | | | | | R.D.P. No. 14 | |
| | | 1,500,000 | 350,000 | 1,150,000 | | \$125,000 expended | |
| H | WILLOW AVE I-80 Off-ramp (S) Signal | 120,000 | | 60,000 60,000 120,000 | | \$60,000 contrib. by County | 25 |
| I | WILLOW AVE I-80 Off-ramp (N) Signal | 120,000 | | 60,000 | 60,000 | \$60,000 contrib. by County | 24 |
| Subtotal | | \$15,470,000 | \$2,625,000 | \$1,930,000 | \$10,915,000 | | |

TABLE 7C

TRAFFIC MITIGATION SUMMARY

1987 DOLLARS

| Item No. | | Total Cost | Redevelopment Contrib. | Frontage Contrib. / Other Agencies | Traffic Mitigation | Remarks | Constr. Priority |
|----------|---|-------------|------------------------|------------------------------------|--------------------|--|------------------|
| K | WILLOW AVE IMPROVE. : Bet. 180 Ramp Signal: | \$300,000 | | \$150,000 | \$150,000 | \$150,000 contrib. : by County | 23 |
| L | SYCAMORE /CREEKSIDE : Signal | 120,000 | | 60,000 | 60,000 | | 6 |
| M | SYCAMORE : Turquoise Signal | 120,000 | | 60,000 | 60,000 | | 5 |
| N | SYCAMORE : Refugio Signal | 120,000 | | 60,000 | 60,000 | | 4 |
| P | SAN PABLO/HERCULES : Signal Modification | 80,000 | | | 80,000 | | 20 |
| Q | SYCAMORE /ALFRED : NOBEL Signal | 120,000 | | 120,000 | | | 14 |
| R | JOHN MUIR/ALFRED NOB : Signal | 120,000 | | 120,000 | | | 15 |
| S | SIGNAL COORDINATION : : | 10,000 | | | 10,000 | | 7 |
| T | SYCAMORE/SAN PABLO : Signal Modification | 80,000 | | | 80,000 | | 17 |
| U | REFUGIO VALLEY : Road Improvements | 624,000 | | | 624,000 | | 9 |
| V | REFUGIO VALLEY RD : Median Landscaping | 90,000 | | | 90,000 | | 16 |
| W | SAN PABLO AVE IMPROV : City Limit to Parker: | 500,000 | | 290,000 | 210,000 | Includes participa. : of City in County : project. \$290,000 : contrib. by county : | 13 |
| Subtotal | | \$2,284,000 | | \$860,000 | \$1,424,000 | | |

Revised 4/20/88

TrafSum3

TABLE 7C
TRAFFIC MITIGATION SUMMARY
1987 DOLLARS

| Item No. | | Total Cost | Redevelopment Contrib. | Frontage Contrib. / Other Agencies | Traffic Mitigation | Remarks | Constr. Priority |
|-------------|-----------------------------------|--------------|------------------------|------------------------------------|--------------------|----------------|------------------|
| X | WIDENING 1-Lane Section | 1,020,000 | | | 1,020,000 | Per JHK Report | 18 |
| Y | WIDENING 2-Lane section | 360,000 | | | 360,000 | Per JHK Report | 19 |
| Z | BAYBERRY Park & Ride Facility: | 100,000 | | | 100,000 | | 8 |
| ===== | | | | | | | |
| Subtotal | | \$1,480,000 | | | \$1,480,000 | | |
| ===== | | | | | | | |
| GRAND TOTAL | | \$19,234,000 | \$2,625,000 | \$2,790,000 | \$13,819,000 | | |
| ===== | | | | | | | |

SUMMARY

| | |
|---|--------------|
| 1. Total Projects Cost | \$19,234,000 |
| 2. Total Redevelopment Contributions | \$2,625,000 |
| 3. Total Redevelopment Contributions Committed to Projects in Progress (Informational only) | \$1,275,000 |
| 4. Total Proposed Contributions By County in City Projects | \$270,000 |
| 5. Total Contribution by County to County Projects | \$290,000 |
| 6. Frontage Contributions | \$2,790,000 |
| 7. Mitigation Contribution | \$13,819,000 |

"Build-out" without any improvements to the circulation/transportation system. Third, the model is used to identify which specific transportation improvements need to be constructed in order to achieve a Level of Service D. or better in the City.

Based on the "City-wide Traffic Study" a list of needed transportation improvements were prepared. Project costs, contributions, shortfalls and a priority based sequence of construction for these Transportation Improvement projects are shown in Table 7C. The locations of the projects are shown on Figures 9 and 9A. Projected Levels of Service for major intersections at "Build-out" conditions both "without improvements" and "with improvements" are shown in Table 7D.

TABLE 7D - LEVELS OF SERVICE *

| Intersection | Without Improvement | With Improvement | With Improvements and TSM Program |
|----------------------------|---------------------|------------------|-----------------------------------|
| I-80 SB Ramp/Willow | D/E | B/B | B/B |
| I-80 NB Ramp/Willow | B/F | A/C | A/C |
| San Pablo/John Muir | F/F | D/D | D/D |
| San Pablo/Sycamore | F/F | D/D | D/D |
| San Pablo/Hercules | B/F | B/D | A/D |
| Bayberry/Sycamore | F/F | D/C | D/C |
| Creekside/Sycamore | A/F | A/D | A/D |
| Turquoise/Sycamore | A/E | A/B | A/B |
| Refugio Valley Rd/Sycamore | A/B | A/B | A/B |

* In each column, AM Level of Service is shown first, followed by PM Level of Service.

Critical Assumption: Construction of Route 4/Willow Area Interchange.

Perhaps the key impact assumption in modeling the City-Wide Traffic Study is that an interchange will be built in the Route 4/Willow area (Project "E"). This interchange has been an integral part of the City's General Plan since the early 1970's. The City has over the years met with Caltrans on potential design and how to implement this project. Implementation of this project could experience difficulties with Caltrans' requirement of one mile spacing between interchanges, and with that of funding.

Project "E" in the Traffic Mitigation Summary provides for two phases of construction. Phase 2 would extend Palm Avenue to the north and require an overpass across Route 4 which would provide access to Route 4

westbound, and to Willow Avenue. As part of this phase the Bayberry intersection (Phase 1) would be eliminated and would be reconstructed to provide an eastbound connection to Route 4. This project alone will not satisfy the needs of the traffic model in achieving a Level of Service D and would provide no advantage unless the overpass were part of the future interchange.

Possible Scenarios to Maintain LOS D if Interchange Is Not Constructed.

If no interchange or overpass were built on Route 4 west of the railroad there would be a need to modify some of the assumed development in order to maintain a Level of Service "D".

Required modifications under various scenarios are as follows:

1. With no Transportation System Management (TSM) and no northbound I-80 Bayberry on-ramp -- Under this condition, the following modifications to the land use would be necessary:
 - Reduction of 490,000 square feet (or 30%) of the office and industrial developments in the Hercules Properties/Gelsar Inc. Specific Plan area located west of I-80 and south of the already approved Bio-Rad/North Shore Business Park developments.
 - Substitute 340,000 square feet of office and retail commercial developments east of I-80 with 250 units of residential development. This change would impact all or part of the 25-acre site east of the new City Hall and possibly other developments.
 - Substitute 250,000 square feet of industrial development along Bayberry Avenue with uses such as mini-warehouse or churches which generate very few peak hour trips.
2. No TSM program but with the Bayberry I-80 on-ramp -- Under this condition, the first two items of change as described above would be required. However, the industrial developments along Bayberry can be allowed to proceed.
3. With TSM but without the Bayberry on-ramp -- Under this condition, a reduction of 164,000 square feet (10%) in office and industrial developments in the Hercules Properties/Gelsar Inc.

Specific Plan area and the last two items of change, as described under Scenario 1, would be required.

4. With TSM and with the Bayberry I-80 on-ramp -- Under this condition, the industrial development along Bayberry can be allowed to proceed but other changes, described under Scenario 3, would be required. Thus, the modifications to land use would include reduction of 164,000 square feet in office and industrial developments west of I-80 and the substitution of 340,000 square feet of office and retail commercial developments east of I-80 with 250 units of residential developments.

Based on the City-Wide Traffic Study, the City has concluded that an improved Route 4 interchange and additional ramps on I-80 at Willow Avenue are needed taking into consideration all of the following factors:

- 1) Through freeway traffic and freeway-to-freeway movements.
- 2) Service to the land uses proposed in the City's General Plan.
- 3) Traffic circulation within the City.
- 4) Distribution of traffic on City streets and freeway ramps to reduce undue congestion.
- 5) Railroad crossings and other physical constraints to street design.
- 6) Traffic signal operations.
- 7) Traffic channelization and informational signs.

3. Scenic Routes

The State of California adopted a state scenic program in 1963 to designate "official state scenic highways." In Contra Costa County, Routes 680, 24 and 239 are designated as scenic highways. However, there are no officially designated scenic highways in the State Master Plan within or in the vicinity of the City of Hercules.

The Contra Costa County Scenic Routes Element shows routes which contain the scenic qualities necessary to meet their goals.

Two such scenic routes with segments in the City of Hercules include:

| <u>Road Name and Category</u> | <u>Termini</u> | <u>Length to be Included</u> |
|---|--|----------------------------------|
| State Route 4 Scenic Freeway | Interstate 80 to State Route 84 | 33.4 miles |
| San Pablo Avenue Scenic Thoroughfare | Pinole Valley Road to Interstate 80 at Crockett | 6.6 miles |

The segments of these scenic routes within the City were included for coordination purposes only. It is understood that the City's standards and criteria would be applicable to City streets.

Both of the segments of proposed County Scenic Routes in the City have been designated as City Scenic Routes (see Figure 10). San Pablo Avenue through the City of Hercules is presently a scenic corridor of relatively high environmental value and should be preserved and enhanced as the City grows and develops.

Although State Route 4 does not presently have an outstanding scenic quality within the City, other nearby portions of Route 4 are quite scenic (such as the Franklin Canyon Golf Course). Since Route 4 is an important window to the City, the general movement of the view from this facility is a desirable environmental goal. The City should be particularly interested in the design configuration and quality of landscaping in connection with future construction to freeway standards by the State.

4. Transit

a. Existing Service

The BART system connects the City of Richmond with Fremont to the south, Concord to the east and San Francisco and Daly City across the Bay and to the south. This system is primarily a fixed rail commuter service from outlying communities to major employment centers in the Bay Region. The most accessible BART station for Hercules is the El Cerrito Del Norte station, at Cutting Boulevard and I-80 in Richmond, nine miles south of Hercules.

Public Transportation within Hercules is provided by two agencies: Western Contra Costa County Transit Authority (WestCAT) provides the local service while the Bay Area Rapid Transit (BART) is the regional carrier. Their services are as follows:

- 1) Western Contra Costa County Transit Authority (WestCAT)

Fixed Routes: Route 12 serves the neighborhoods along Redwood and Lupine Roads as well as Creekside Shopping Center, Hercules Industrial Park and downtown Pinole.

Route 14 serves the neighborhoods along Pheasant Drive, Falcon Way, and Refugio Valley Road. It also serves Creekside Shopping Center and Refugio Valley Park.

Route 70A is operated, under contract to WestCAT, by AC Transit. The route operates on San Pablo Avenue from Crockett to Hilltop Mall. It also serves Contra Costa College, Brookside Hospital, and connections to other AC Transit routes.

Dial-A-Ride: Dial-A-Ride is a door-to-door service. It is available to all Hercules residents who live east of Highway 4 and to all elderly (60 years and older) and disabled residents.

- 2) Bay Area Rapid Transit District (BART): BART operates the "J" line Express Bus Service which provides direct connections to the El Cerrito Del Norte BART station. The Hercules stop is located on San Pablo Avenue just west of Sycamore Avenue.

b. Transit Potentials

- 1) Transportation System Management (TSM). There is a need to implement an active TSM program to enlist the major employers or groups of employees to create car/van pool programs and flexible work hours. In conjunction, the TSM participants should encourage the transit services to work for more routes and shorten headways.

The City-Wide Traffic Study utilized in modeling a 10% reduction of work trips in zones with commercial/industrial developments and 4% reduction in work trips by residents commuting to the south. While this TSM element does not significantly modify Level of Service, every effort should be made to implement it.

- 2) Development of a "Park and Ride" facility to serve as an interface point for all public transportation.

5. Riding and Hiking Trails

A connecting system of bicycle and hiking trails are shown on the Open Space and Conservation Plan (see Figures 14 and 15). The trail system will be separated from streets and highways, where practical, connecting open spaces and activity areas in the community and linking with regional trails. Trails are classified as:

- a. Regional riding trails
- b. Regional hiking trails
- c. Local trails

6. Transmission Lines and Pipelines

There are a number of existing and proposed overhead and underground facilities in the City. Figures 12 and 13 show the major facilities in their recommended locations. The facilities include:

- a. Overhead power transmission lines (60KV and 115 KV)
- b. Water mains and reservoirs
- c. Sewer trunk and treatment plan
- d. Fuel lines
- e. Gas lines

7. Other Transportation Facilities

The City is traversed by two railroad lines; the Southern Pacific and the Atcheson-Topeka and Santa Fe, which is a main line. At present there is no direct water or air service to the City. The deep water channel is several miles from the shoreline at Hercules. The City is conveniently located to two international airports - Oakland and San Francisco.

C. POLICIES AND PROPOSALS

1. Objectives

The basic objectives of the Circulation and Scenic Highway Element are to:

- (1) Provide for the movement of people and commodities in the City, and
- (2) Plan for the preservation and enhancement of visual qualities as viewed from designated scenic routes. Subgoals of these basic objectives are to:

- a. Establish a long-term program for the construction of streets and preservation of future rights-of-way based on traffic projections.
- b. Coordinate the street system with land use and other elements of the General Plan.

TRANSMISSION LINES

LEGEND

| | |
|-------------------|----------------------|
| | OVERHEAD POWER LINES |
| - - - - - | WATER LINE |
| - - - - - | GAS LINE |
| - - - . - - - | FUEL LINE |
| ————— | SEWER LINE |

GENERAL PLAN

CITY OF HERCULES,
CALIFORNIA



500 0 500 1000 1500 2000 2500 FEET

Prepared by KCA ENGINEERS San Francisco

TRANSMISSION LINES

LEGEND

| | |
|-------|----------------------|
| | OVERHEAD POWER LINES |
| ----- | WATER LINE |
| ----- | GAS LINE |
| ----- | FUEL LINE |
| ----- | SEWER LINE |

GENERAL PLAN

CITY OF HERCULES,
CALIFORNIA

Prepared by K&A ENGINEERS San Francisco

600 0 800 1000 1200 1400 1600 1800 2000 2200 2400 ft



- c. Unify the City with a functional internal street system of arterials, collectors, and local streets.
- d. Provide adequate access from the freeways to the surface street system.
- e. Coordinate the City's street system with adjoining city, county and state facilities.
- f. Maintain acceptable local circulation operating conditions on arterial streets/intersections and on local collector streets.
- g. Minimize through traffic in residential neighborhoods.
- h. Promote public transit service within the City and area.
- i. Provide a comprehensive system of riding and hiking trails.
- j. Provide for needed transmission facilities in a manner compatible with other elements of the General Plan.

2. Policies

- a. For health, safety and general welfare, it is the City's policy to provide adequate levels of traffic service throughout the City. Level of Service D or better is the city wide standard for traffic operating conditions during peak hours on arterial streets and intersections.
- b. Neighborhood design should discourage through traffic on local streets.
- c. Residential streets will be designed in relation to the needed capacity and the adjoining housing patterns.
- d. Proposed elements within view of designated scenic routes in the City should be reviewed in terms of their visual impact.
- e. The City should actively participate in cooperative efforts to provide effective public transit to the City and adjacent communities.
- f. The City should promote the establishment of riding and hiking trails throughout the community and coordinate with other agencies planning trail systems in the area and region.

- g. Major transmission and fuel lines should be reviewed to ensure compatibility with affected General Plan elements.

3. Proposals and Standards

a. Traffic Circulation

The Circulation Plan (Figures 10 and 11) show three classifications of traffic facilities: freeways, arterials and local collector streets as well as freeway interchanges, railroads, scenic routes, and future highways.

1) Freeways

Freeways are routes designed to carry heavy traffic volumes over long distances. Access is controlled, crossings are grade separated and lanes in opposite directions are separated by medians.

Interstate 80 is a six-lane freeway proposed for widening to eight lanes and State Route 4 is partly a freeway and is planned for expansion to a six-lane freeway. Figure 9 shows the proposed interchanges of these freeways with arterial city streets.

2) Arterial Streets

Arterial streets provide the principal traffic circulation system within the community. They also provide the transition between collector and local streets and the freeway system. Arterials are high volume streets having two or more moving lanes and a parking lane in each direction. They sometimes have median strips and turn lanes and usually have traffic signals at major intersections. The arterial streets in Hercules are San Pablo Avenue, Willow Avenue, Sycamore Avenue and Refugio Valley Road.

3) Local Collector Streets

Local collector streets provide the transition between arterial streets and land uses within the community. The configuration of these streets will depend on the amount of

traffic they will carry and the manner in which access is provided to adjoining land uses.

b. Scenic Routes

San Pablo Avenue and State Route 4 are designated as scenic routes in the City (see Figures 10 and 11). These designations are compatible with the county scenic routes proposed in Contra Costa County's preliminary draft of their Scenic Routes Element.

c. Transit

Convenient and efficient public transit service in the City should be provided to offer an attractive alternative to the automobile. Potentials for transit service to the future residents of the City include:

- Create a transportation system management (TSM) program.
- Development of a "Park and Ride" facility to serve as an interface point for all public transportation.

d. Riding and Hiking Trails

Three types of riding and hiking trails shown on the Open Space and Conservation Plan include:

- 1) A regional riding trail connecting the county-wide trail system.
- 2) Regional hiking trails which are in general conformity to the proposed county hiking trail plan.
- 3) Local hiking trails connecting open spaces and activity areas throughout the City.

A more detailed description of the trail system can be found in the Open Space and Conservation Element.

e. Transmission Lines and Pipelines

The existing locations for major transmission lines and pipelines are shown in Figures 12 and 13.

D. IMPLEMENTATION

1. Establishment of planning liaison with the Federal, state and regional agencies concerned with transportation to ensure the coordination of their projects with the policies of the circulation element.

2. Designation of a local select system of arterial and collector streets to be eligible for State and Highway Trust Fund monies.
3. Investigation of the use of grant funds from regional, state and Federal agencies such as the Department of Transportation, and the Department of Housing and Urban Development for the provision of specialized circulation facilities such as mass transit, hiking, biking and riding trails, and scenic highways.
4. Designation of rights-of-way in advance of development and encouragement and requirement of dedication of streets, paths and trails as part of the land development process.
5. Establishment of special assessment districts for street improvements, construction of bridges, provision of public transit or parking, etc.
6. Create a Transportation Management System (TSM) program.
7. Establish a traffic mitigation fee to be paid by all remaining development projects to offset the need improvements outlined in the City-Wide Traffic Study.
8. Acquisition of rights-of-way and easements and directly construct improvements using local sources of funds.
9. Review of development proposals in terms of circulation and scenic route policies and proposals.
10. Support area-wide cooperative efforts to expand public transit service to the City and surrounding area.
11. Encourage pedestrian and bicycle travel for home-to-work and home-to-local-shopping trips through the provision of pathways and bicycle storage.
12. As part of road construction projects, enforce dust control measures (such as watering graded areas daily) and require that contractors be responsible for the immediate clean-up of any materials spilled on city streets as a result of grading, construction or hauling operations.
13. Plan for construction of the road improvement projects identified in this Element through the City's Capital Improvement Program, and schedule each project according to current/projected congestion at the site of the improvement and the financial condition of the Traffic Mitigation Fund.
14. Establish a short-term (6 months) staff/developer program to develop a TSM program for Hercules that

would include:

- Trip reduction goals for private and public development;
- Actions to reduce peak hour private vehicle trips (e.g. flex-time, car pools, support of transit);
- Traffic routing controls;
- Further review of alternative funding sources; and,
- An implementing and enforcement ordinance.
- Alternative financing methods for fee payment which do not put the City at risk but ease the developer impact/burden.

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HOUSING ELEMENT
OF THE GENERAL PLAN

APPROVED BY THE CITY COUNCIL
JUNE 26, 1990

HERCULES HOUSING ELEMENT

Prepared for:
CITY OF HERCULES

Prepared by:
SEDWAY & ASSOCIATES

Adopted:
June 26, 1990

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I. INTRODUCTION AND PURPOSE

PURPOSE

Housing elements are one of the nine elements of the general plan every California city and county is required by state law to prepare. The housing, land use and circulation elements form the heart of a community strategy to assure orderly growth and provide housing for all economic segments.

In 1977, the California Department of Housing and Community Development (HCD) set forth guidelines which govern the content of housing elements. The regulations covering the housing element have been frequently updated and expanded since the legislation was first enacted. Most generally, the State requires that the housing element include "an identification and analysis of existing and projected housing needs and a statement of goals, policies, qualified objectives, and scheduled programs for the preservation, improvement and development of housing." To maintain up-to-date and relevant goals and policies, state law requires that all housing elements be updated not less than every five years. For cities in the nine Bay Area counties, state law requires that the housing element update occur by July 1, 1990.

This updated housing element has been designed to meet the State of California Housing Element Law (Article 10.6 of the Government Code). It replaces the previous housing element which was adopted in 1984. The housing goals outlined in the previous housing element have been modified and expanded to better address the current housing needs of the community. Several new programs have been adopted and will be implemented over the 1990 to 1995 planning period in an attempt to address the City's share of the region's housing needs for all income categories.

CITIZEN PARTICIPATION

To facilitate participation in the housing element update process, two joint City Council/Planning Commission public workshops were held as well as two Planning Commission public hearings and two City Council public hearings. To ensure that all economic segments of the community were involved, the hearings were advertised in the local newspaper, on various community message boards and on the local cable television station. Further, to obtain public comment, a notice of availability of the draft housing element was mailed out to developers, all community organizations and homeowner groups, and school representatives. The letter invited comments and input. It was mailed immediately after the draft housing element was issued, approximately one month prior to the first joint City Council/Planning Commission public workshop.

CONSISTENCY WITH OTHER GENERAL PLAN ELEMENTS

To ensure that the housing element is consistent with other elements of the general plan, the Planning Director conducted a general review of all new recommended programs. The review showed no significant inconsistencies. The City Council is also currently considering an Economic Development Strategy Plan. Adoption of this Plan calls for updating the Land Use Element of the General Plan. If this moves forward, any minor inconsistencies will be addressed.

TABLE 1
POPULATION GROWTH, 1959-1988

| Year | City of Hercules | Average Annual Percent Increase | Contra Costa County | Average Annual Percent Increase | Bay Region | Average Annual Percent Increase |
|------|---------------------|--|---------------------------|--|------------|--|
| 1959 | 310 | -- | 409,030 | -- | 3,638,939 | -- |
| 1969 | 252 | -1.9% | 558,389 | 3.7% | 4,628,199 | 2.7% |
| 1979 | 5,963 | 226.6% | 656,380 | 1.8% | 5,179,784 | 1.2% |
| 1985 | 10,089 | 11.5% | 721,655 | 1.7% | 5,626,755 | 1.4% |
| 1988 | 14,527 | 14.7% | 775,478 | 2.5% | 5,865,353 | 1.4% |

Sources: U.S. Census, Department of Finance, Sedway & Associates.
[hercpop.eca.1/90]
Date Printed: 03/06/89

TABLE 2
HERCULES AND CONTRA COSTA COUNTY
DEMOGRAPHIC PROFILE

| | HERCULES (1) | | | CONTRA COSTA COUNTY | | |
|-----------------------------|--------------|----------|----------|---------------------|----------|----------|
| | 1990 | 1995 | % CHANGE | 1990 | 1995 | % CHANGE |
| POPULATION | 16,500 | 18,300 | 10.9% | 790,000 | 861,000 | 9.0% |
| EMPLOYED RESIDENTS | 9,400 | 10,400 | 10.6% | 407,800 | 456,700 | 12.0% |
| EMPLOYMENT | 2,150 | 3,030 | 40.9% | 292,700 | 334,710 | 14.4% |
| # OF RESIDENT COMMUTERS (2) | 7,250 | 7,370 | 1.7% | 115,100 | 121,990 | 6.0% |
| % OF RESIDENT COMMUTERS (3) | 77.1% | 70.9% | -8.1% | 28.2% | 26.7% | -5.4% |
| HOUSEHOLDS | 5,300 | 5,990 | 13.0% | 303,690 | 334,390 | 10.1% |
| HOUSEHOLD SIZE | 3.1 | 3.0 | -2.3% | 2.6 | 2.5 | -1.2% |
| HOUSEHOLD INCOME (4) | \$59,600 | \$64,000 | 7.4% | \$49,600 | \$52,400 | 5.6% |

(1) Data extends beyond boundaries of city to sphere of influence.

(2) Number of employed residents who commute outside Hercules and Contra Costa County.

(3) Percent of employed residents who commute outside Hercules and Contra Costa County.

(4) Mean household income in constant 1988 dollars.

SOURCE: ABAG Projections 1990, Sedway & Associates January 1990.

[hercdemo,eca, 1/90]

Date Printed: 07/02/90

ABAG's household growth projections for Hercules may be overly conservative, however. Over the last six years, an average of over 500 new households have been added annually. Further, 1,100 units of housing have been approved and/or are under construction as of September 1989.

As shown on Table 2, ABAG estimates that the average household size in Hercules is 3.1 persons, compared to an average of 2.6 persons for the County as a whole. The household survey results indicated a slightly greater average household size of 3.36 persons. Between 1990 and 1995, ABAG projects the City's household size will decrease to an average of 3.0, with the Countywide average declining to 2.5. The larger than average household size in Hercules is attributable to the predominance of detached single-family homes, typically with three or four bedrooms, with the majority (approximately 51 percent) of the households comprised of families with children.

Employment Trends

Contra Costa County expects to gain 42,000 new jobs between 1990 and 1995, an increase of 14.4 percent. Of these, an estimated 880 will be in Hercules, representing a 41 percent increase over the current job base of 2,150. By far the largest employer in the City is Bio-Rad Laboratories, a light industrial company which manufactures and sells chemical and clinical equipment. Bio-Rad currently employs 350 workers at the North Shore Industrial Park in Hercules, up from 250 workers prior to the October 17, 1989 earthquake which damaged the company's Richmond facility. Discussions with Bio Rad's Human Resources Department indicated that there are no immediate plans to relocate these workers. The Company has substantial room to expand, and plans on developing more space in the next several years. Other large employers include Pacific Refining Company (116 workers), Mechanics Bank (110 workers), the school district (80 workers), and 52 full-time City employees.

In spite of the local growth in employment, the net outflow of employed residents compared to local jobs will remain substantial. In 1990, there was a net outflow of jobs, or deficit in local employment, of 7,250, suggesting that over 77 percent of the City's employed residents commute to work outside the City. In an informal survey of purchasers in the new subdivisions, a substantial percentage of the City's homebuyers were found to work in San Francisco and Oakland. The percent of out-commuting is projected by ABAG to decline to 70 percent over the coming five years, but the City will retain its predominately bedroom community character.

The City is actively promoting programs to generate new employment and diversify the local economy. Substantial amounts of vacant, developable commercial land are likely to add to local employment opportunities in the future. Enhancing the local tax base and aiming at stabilizing the current jobs/housing imbalance is a paramount goal of the City. In addition to contributing to the local tax base, promoting a viable business base will add to the availability of convenient local shopping and services, assist in reducing overall commuting, which generally will contribute to the quality of life available to the City's residents. As such, it is less appropriate for the City to take a proactive role in converting vacant, commercially zoned land for residential use than in communities faced with limited opportunities to house new workers.

Household Incomes

Average household incomes in Hercules are estimated by ABAG to be \$59,600 in 1990 (1988 dollars), compared to \$49,600 for Contra Costa County. The higher than average income is attributable to the large number of dual income households (the household survey found an average of 1.6 workers per household) as well as the relatively easy access to higher paying employment opportunities in San Francisco, compared to the central Contra Costa County cities. Household incomes were also estimated in the household survey. Based on the survey results, the average and median household income was found to fall in the \$51,000 to \$60,000 range, consistent with the ABAG estimates. The City's incomes are projected to remain above the County average for the upcoming five-year period.

The average household incomes for renters versus owners in the City is difficult to estimate. The survey results indicated that 91 percent of the City's households are owner-occupants. The manager of the City's one apartment project indicated she requires tenants to have incomes of four times the monthly rent rate, or approximately \$33,600 per year. A portion of the City's condominiums and single-family homes are also rented. While the household incomes of these renters is not currently available, they are presumed to be higher on average than that of the apartment dwellers due to the higher rents charged for these larger units.

Ethnic Composition

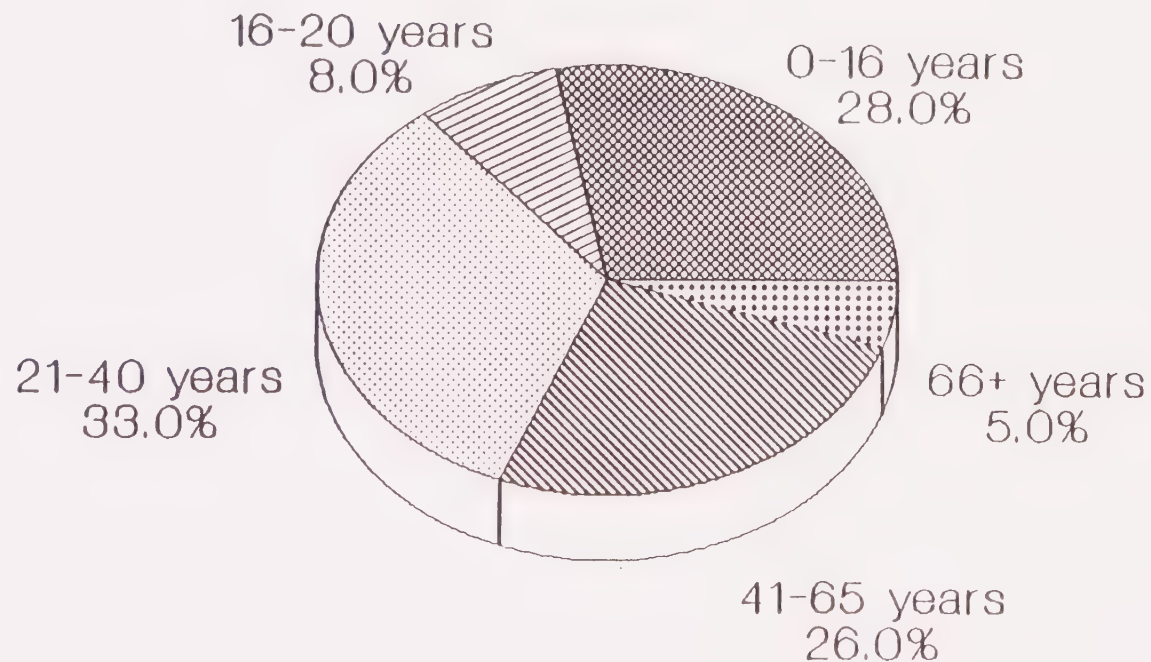
The City has a diverse ethnic population. At the time of the 1980 Census, 46 percent of the City's population was white, 37 percent Asian, 12 percent black, with the remaining six percent comprised of other groups. The ethnic composition of the City continues to be diverse. Of those households recently surveyed, 46 percent were white, 23 percent Filipino, 15 percent other Asians, six percent black, five percent hispanic, and the remaining four percent other. These statistics indicate the increasing representation of Asians in the City, and the decline in the proportion of the City's black population.

Age of Population

In 1980, the City's population was younger than most of the surrounding communities. The City's median age was 28.4 years, compared to 31.5 years in Contra Costa County and 31.3 in the Bay Area. Only 2.6 percent of the City's population was senior citizens, compared to 9.3 percent for the County and 10.3 percent for the region.

The age breakdown has changed somewhat for the City since 1980. As indicated in Figure 1, 28 percent of the City's population is under the age of 16, eight percent are between the ages of 16 and 20, 33 percent fall into the 21 to 40 age bracket, 26 percent are between the ages of 41 and 65, and five percent are over the age of 65 years. By comparison, ABAG estimates that nine percent of the Countywide population is over the age of 65, and 36 percent are under 20 years of age. This data suggests that the City is comprised primarily of young families. Nonetheless,

Figure 1
Distribution of Population by Age
Hercules 1990 Survey Results



Source: Moore Iacofano Goltsman;
Sedway & Associates, February 1990

with 26 percent of the population in the 41 to 65 age bracket, and five percent over the age of 65, the City's population is aging more rapidly than the County.

To summarize, the City's demographic profile is made up of a large proportion of moderate to above moderate-income young families. Due to the generally homogenous housing stock, with all but one new subdivision being sold for between \$100,000 and \$300,000, the income ranges of the City's households is relatively narrow compared to other communities with a wider variety of housing by type and age. The City is also gaining an increasing number of elderly residents, and this trend is likely to continue over the next decade.

III. HOUSING AND NEIGHBORHOOD CHARACTERISTICS

Housing Production Trends

At the end of 1988, 76 percent of Hercules' housing stock was comprised of single-family homes, half of which were developed after 1980. During the 1980s, single-family construction rates constantly escalated, with 39 homes added in 1981, and 448 new homes in 1988 (see Table 3). Between 1980 and 1989, 1,098 multifamily units were added, 84 percent of which were added in the last four years. The number of new multifamily units also increased rapidly in recent years. In fact, multifamily housing contributed nominally to the rate of construction in the early 1980s. Within the last five years, by comparison, about half of all the units built in Hercules were multifamily. The number of new multifamily units peaked in 1987, when 385 units were constructed. Preliminary figures provided by the City indicate that an additional 616 units were added in 1989, of which 358 were single-family homes and 258 were multifamily units.

In September 1989, there were 333 residential units under construction and 763 units approved for construction. Of these remaining units, 36 percent were multifamily units and 64 percent were single-family attached and detached homes.

The 84-unit Willow Glen apartment project, developed in 1986, represents the only exclusively rental development in the City. In addition, a small percentage of the City's condominium and single-family homes are rented. In 1980, eight percent of the City's housing stock was found to be renter occupied. This same percentage was reported in the recent household survey. Based upon the percentage of owner-occupied tax exemptions filed by Hercules residents, an estimated 25 percent of the housing stock is rented. This larger percentage likely overstates the percentage of renters, however, as some owner-occupants may not be aware of the tax exemption.

Housing Prices and Rent Levels

The average home resale price in Hercules was \$153,810 during 1989, based upon information compiled by the West Contra Costa County Board of Realtors. Table 4 summarizes average home resale prices in Hercules and surrounding communities. The majority of new subdivisions, which generally sell for a higher price, are not represented in the Board's multiple listing service data, as most are sold directly through private sales offices. These figures illustrate that the City's resale housing prices are quite affordable relative to the Bay Area in general, where the median home price was \$247,000 in December, 1989. The City's housing prices are somewhat higher than Pinole and El Sobrante, but considerable more affordable than the City of El Cerrito which is located less than 10 miles south. Appreciation rates are shown to be 5.4 percent from 1988 to 1989, down from 10.4 percent the previous year. These increases are considerably less than the figures registered for the surrounding areas, where home resale prices increased from between 14 and 22 percent last year.

TABLE 3
HISTORIC GROWTH OF HOUSEHOLD AND HOUSING SUPPLY
CITY OF HERCULES

1. TOTALS

| YEAR ENDING | HSHLD POPULATION | # HSHLDS | TOTAL # HSG UNITS | % VACANT | HOUSING UNITS | | |
|----------------|---------------------|-------------|----------------------|-------------|---------------|-------|----------------|
| | | | | | SINGLE | MULTI | MOBILE HOME |
| 1980 | 6,476 | 1,926 | 1,987 | 3.1% | 1,898 | 85 | 4 |
| 1981 | 6,562 | 1,961 | 2,026 | 3.2% | 1,937 | 85 | 4 |
| 1982 | 6,789 | 2,025 | 2,096 | 3.4% | 2,007 | 85 | 4 |
| 1983 | 7,317 | 2,175 | 2,248 | 3.2% | 2,138 | 106 | 4 |
| 1984 | 8,675 | 2,604 | 2,658 | 2.0% | 2,392 | 262 | 4 |
| 1985 | 10,089 | 3,053 | 3,110 | 1.8% | 2,676 | 430 | 4 |
| 1986 | 11,650 | 3,563 | 3,588 | 0.7% | 2,993 | 591 | 4 |
| 1987 | 12,589 | 3,995 | 4,270 | 6.4% | 3,290 | 976 | 4 |
| 1988 | 14,527 | 4,618 | 4,925 | 6.2% | 3,738 | 1,183 | 4 |
| | | | | | 76% | 24% | 0% |

2. ADDITIONS

| DURING THE YEAR: | HSHLD POPULATION | # HSHLDS | TOTAL # HSG UNITS | % VACANT | HOUSING UNITS | | |
|------------------------|---------------------|-------------|----------------------|-------------|-------------------|------------------|----------------|
| | | | | | SINGLE- FAMILY | MULTI- FAMILY | MOBILE HOME |
| 1980 | | | | | | | |
| 1981 | 86 | 35 | 39 | 0.1% | 39 | 0 | 0 |
| 1982 | 227 | 64 | 70 | 0.2% | 70 | 0 | 0 |
| 1983 | 528 | 150 | 152 | -0.1% | 131 | 21 | 0 |
| 1984 | 1,358 | 429 | 410 | -1.2% | 254 | 156 | 0 |
| 1985 | 1,414 | 449 | 452 | -0.2% | 284 | 168 | 0 |
| 1986 | 1,561 | 510 | 478 | -1.1% | 317 | 161 | 0 |
| 1987 | 939 | 432 | 682 | 5.7% | 297 | 385 | 0 |
| 1988 | 1,938 | 623 | 655 | -0.2% | 448 | 207 | 0 |
| TOTAL | 8,051 | 2,692 | 2,938 | 3.4% | 1,840 | 1,098 | 0 |
| AVERAGE | | | | | | | |
| 1980-88 | 1,006 | 337 | 367 | 0.4% | 230 | 137 | 0 |
| | | | | | 63% | 37% | 0% |
| AVERAGE | | | | | | | |
| 1986-88 | 1,479 | 522 | 605 | 1.5% | 354 | 251 | 0 |
| | | | | | 59% | 41% | 0% |

Sources: California State Dept. of Finance, Sedway & Associates.

Note: Population estimates reported by the State Dept. of Finance are actually as of January 1st of each year, but for purposes of the above analysis are treated as if they are on December 31st of the prior year.

Date Printed: 03/06/89

[hhg1, mhf, 1/90]

TABLE 4
ANNUAL AVERAGE HOME PRICES (1)
WEST CONTRA COSTA COMMUNITIES AND BAY AREA

| Community | 1985 | Percent Increase 1985-1986 | 1986 | Percent Increase 1986-1987 | 1987 (2) | Annualized Percent Increase 1987-1988 (3) | 1988 | Percent Increase 1988-1989 | 1989 |
|-------------------|---------|----------------------------------|---------|----------------------------------|-----------|--|-----------|----------------------------------|-----------|
| Hercules | N/A | N/A | N/A | N/A | \$138,621 | 10.4% | \$145,861 | 5.4% | \$153,810 |
| Pinole | N/A | N/A | N/A | N/A | 127,544 | 25.3% | 143,672 | 20.3% | 172,841 |
| El Cerrito | N/A | N/A | N/A | N/A | 174,041 | 46.7% | 214,676 | 14.4% | 245,639 |
| El Sobrante | N/A | N/A | N/A | N/A | 128,723 | 7.5% | 133,576 | 22.3% | 163,305 |
| West Contra Costa | 100,349 | 8.2% | 108,538 | 6.9% | 116,049 | 12.5% | 130,505 | 16.2% | 151,592 |
| Bay Area (4) | 146,451 | 14.4% | 167,612 | 4.4% | 175,064 | 33.6% | 233,921 | 10.1% | 257,535 |

- (1) Based on Multiple Listing Service (MLS) sales of single-family homes, townhomes, and condominiums. MLS data includes many, but not all, residential sales. It does not include sales of many newly constructed homes, particularly high end houses.
- (2) 1987 figures for Hercules, Pinole, El Cerrito and El Sobrante are for the last 6 months of the year only.
- (3) The annualized increase in home price is calculated by dividing the percentage change by 6 months and multiplying by 12 months. For Hercules, Pinole, El Cerrito, and El Sobrante only.
- (4) Median home prices based on December MLS sales data from the following boards: Berkeley, Contra Costa, Los Altos-Los Gatos-Saratoga-Mountain View-Sunnyvale, Marin, Palo Alto, San Jose, Southern Alameda, Oakland, and San Francisco.

Source: West Contra Costa Board of Realtors; California Board of Realtors; Sedway & Associates. January 1990.
[prices.e.ca.1.90]

Date printed: 03/06/89

Home prices in the City's new developments generally range from about \$100,000 to \$200,000 for new condominium units, and from about \$200,000 to \$390,000 for new detached single-family homes. Table 5 summarizes recent sales prices for new or recently completed projects. Demand for these units has been strong based on reported absorption and appreciation rates. Sales agents marketing the newer projects reported appreciation rates for most of the new condominiums and duets was about 25 percent last year. Tiffany Ridge, a single-family subdivision developed starting in 1977, has had average prices increase from \$62,000 to \$205,000, or an average annual increase of 25 percent. Appreciation rates were lower for the Tiffany Ridge Chateau project. With sales prices in the \$350,000 to \$400,000 range, this 77-unit development represents the highest home prices in Hercules. Appreciation rates over the last four months averaged two to three percent, representing an annualized increase of six to nine percent.

Historic rental data is not relevant for Hercules. Rents in the Willow Glen Apartment project, which has all two-bedroom units, range from \$710 to \$745 per month. As indicated in Table 6, a new condominium project, Refugio Valley Village, will be renting all of its 220 units for a few years. Anticipated rents for this development range from a low of \$900 for a one-bedroom apartment to \$1,200 for a three-bedroom unit. Additionally, between five and ten percent of the occupied condominium units surveyed were found to be rented. Rents in these units are estimated to range from about \$900 to \$1,200 per month.² (Additional condominiums were also contacted, but rental information was not available.)

Vacancy Rates

In 1988, the Department of Finance figures indicated that the City had a residential vacancy rate of approximately six percent. However, due to the large number of new homes being marketed, this figure likely overstates the City's stabilized vacancy rate; that is, the vacancy rate registered when all new projects have been leased up or sold. Vacancy rates at Willow Glen generally average five to six percent, due to an average turnover of one to two units per month. Prior to the rapid increase in local construction, vacancy rates in the City (pre 1985) were about three percent. A market equilibrium is generally defined as a vacancy rate of about five percent, which allows for normal turnover of units.

Housing Conditions

As previously discussed, the City of Hercules has a predominantly new housing stock. In 1980, 35 percent of the existing units were built within the previous year, and 60 percent of the current 4,925 units have been constructed since 1980. A special 1975 County Census listed only one unit in Hercules as "unsound". To substantiate the generally good condition of the housing stock, an informal windshield survey was conducted of all of the City's neighborhoods. In general, homes were found to be well maintained and did not evidence signs of deterioration. As such,

² Based on discussions with leasing agents.

TABLE 5
NEW DEVELOPMENT PROJECTS
HERCULES

| Project | Location | Type | # of Units | Unit Type | Sq.ft. | Price | Absorption Per Month | Comments/Buyer Profile |
|-----------------------|----------|-------|---------------|-----------|---------------|---------------------|-------------------------|---|
| CURRENTLY FOR SALE: | | | | | | | | |
| Forest Park | | Condo | 136 | 2 BR | 815 - 1,065 | \$109,000 - 138,000 | 30 | Retired, first time buyers, generally two incomes |
| Bay Pointe | | Condo | 269 | 2 - 3 BR | 800 - 1,200 | \$130,000 - 159,000 | 10 - 12 | Small families and singles. |
| Laurelwood | | Condo | 94 | 2 - 3 BR | 1,471 - 1,738 | \$204,990 - 225,990 | 7 | Small families and singles. Many from SF. |
| Caprice * | | TH | 75 | 2 - 3 BR | 1,450 - 1,800 | \$180,000 - 220,000 | 8 (antic.) | Expect people to move from Bay Pointe. |
| Westwood | | Duets | 192 | 2 - 3 BR | 1,415 - 1,750 | \$187,000 - 228,000 | 3 - 6 | Small families, young couples. |
| Mandalay | | SF-D | 250 | 3 - 5 BR | 1,800 - 2,600 | \$220,000 - 300,000 | 8 | Larger families. Sometimes 2 buyers. |
| Tiffany Ridge Chateau | | SF-D | 77 | 4 - 5 BR | 2,500 - 2,800 | \$342,000 - 392,000 | 12 | Many buyers from Hercules. |

* Should begin marketing in May 1990.

Source: Sedway & Associates
(newdev. eca)

Date Printed: 03/26/90

TABLE 6
SELECTED SURVEY OF RENTAL HOUSING
CITY OF HERCULES

| Project | Type | # of Units | # Rented | Unit Type | % Rented | Sq.Ft. | Rent | Comments |
|----------------|---------|---------------|-------------|--------------|-------------|---------------|-------------|--|
| Willow Glen | Apt | 84 | 84 | 2 BR | (100%) | 822-828 | \$710 - 745 | Require household income 4 times rent. |
| The Village | Condo | 220 | 220 | 1 BR | (20%) | 750 | \$900 | Under construction. |
| | | | | 2 BR | (60%) | 982 | \$1,000 | Expect to begin occupancy in 1991. |
| | | | | 3 BR | (20%) | 1,116 | \$1,200 | Will convert to condominiums after 1996. |
| Laurelwood | Condo * | 94 | 5 | 2 BR | N/A | 1,471 | \$1,100 | Rent is an estimate from the sales office. |
| | | | | 3 BR | N/A | 1,738 | \$1,200 | |
| Glenwood | Condo * | 228 | 12 | 2 - 3 BR | N/A | 683 - 1,249 | \$900 | Rent is an estimate from the sales office. |
| Forest Park | Condo * | 136 | 12 | 2 BR | N/A | 815 - 1,065 | \$800 - 900 | Rent is an estimate from the sales office. |
| Bay Pointe | Condo * | 267 | 2 | 2 - 3 BR | N/A | 800 - 1,200 | N/A | |
| Willowood | Condo * | 150 | 7 | 2 - 3 BR | N/A | 1,000 - 1,400 | N/A | |
| Devonwood | Condo * | 168 | 2 | 2 BR | N/A | 1,015 - 1,185 | N/A | |
| Westwood | Duets * | 192 | 0 | 2 - 3 BR | N/A | 1,415 - 1,750 | N/A | |
| Refugio Valley | SF-D * | 321 | 14 | 3 - 5 BR | N/A | 1,300 - 2,600 | N/A | Includes Mandalay and additional Shea Homes in Refugio Valley. |
| Total Rented | | | 358 | | | | | |

* For-Sale projects which included some individual rental units, were estimated to have approximately 0%-5% rented, based on discussions with sales agents or project managers. Does not represent an exhaustive inventory of all rented units.

Source: Sales agents, Sedway & Associates

[apto:proj.eca.2/6/90]

Date Printed: 07/03/90

a housing rehabilitation program is not of high priority. However, it should be noted that the City does offer home maintenance information to interested owners upon request.

Potential Land Available For Housing

Table 7 provides a summary of vacant land which may be appropriate for future residential development. Figure 2 provides a location map of the vacant sites. (Excluded are the 763 approved housing units which are not yet under construction). The inventory of vacant land suitable for residential development was compiled by the Planning Department in February, 1990. As shown, there are currently about 36 acres of vacant land zoned for residential uses. These parcels are likely to accommodate approximately 79 units.

An additional 725 acres of land may have rezoning potential, or are located in the unincorporated County. The sites in the City limits have commercial zoning and may be appropriate for a mixed-use project which includes a residential component. As noted earlier in the report, due to a primary goal of retaining future job growth potential in the City, it is not recommended to rezone these parcels to allow for an exclusively residential development. It is assumed that 50 percent of the mixed-use sites are developed with housing at R-3 densities (17 units per acre). The Hercules Inc. property, which has an underlying R-1 zoning, is projected to have 50 percent of the property developed at the R-1 density of about four units per acre. Four to six acres of land adjacent to the City Center are assumed to be developed at a R-5 density of 50 units per acre.

Outside the City limits are an estimated 1,365 acres of land within the City's sphere of influence by the Local Agency Formation Commission. That is, these acres are deemed appropriate for future annexation into the City of Hercules. Of this acreage, residential potential exists in the 635-acre Franklin Golf Course area. Future plans for this area include a hotel, as well as an estimated potential for a mix of residential types totalling between 700 and 1,156 units. The annexation of the acreage has been initiated, however due to the lack of infrastructure to the area, as well as other factors, development of this area is not likely to commence within the coming five years. As outlined in the program section of the housing element, the City will adopt appropriate mixed-use zoning and general plan designations for sites deemed appropriate for some residential uses. The annexation of the acreage was initiated in 1986 through a land use policy change in the general plan and EIR. The City applied to LAFCO for annexation; however, a property-sharing agreement was not rendered until May 1990. A supplemental EIR is being completed and annexation is anticipated to occur in early 1991.

The conclusions of the vacant land inventory are that there is limited land that is readily available for residential development. Additional units may be accommodated on parcels of land currently zoned for commercial uses, on publicly-owned property or in an area that is currently outside the City limits. Development of these parcels within the next five-year period will likely be limited.

TABLE 7
INVENTORY OF VACANT LAND
SUITABLE FOR RESIDENTIAL DEVELOPMENT
FEBRUARY 1990

| | Vacant Land (Acres) | Current Zoning | Development Potential (Units) ** |
|---|---------------------------|-----------------------|--|
| (1) LAND WITHOUT DEVELOPMENT APPROVALS: | | | |
| Infill Lots | | | |
| Estate Lots | Approx. 23.0 | RE1/RE1/2 | 15 |
| Church of the Nazarene Site | 5.0 | R2 | 50 |
| Small Ranchette | 7.9 | R1 | 14 |
| Subtotal: | 35.9 | | 79.0 |
| (2) LAND WITH REZONING POTENTIAL: | | | |
| Hercules Properties Inc. (a) (Sub-area 6) | 11.9 | M | 88 |
| Hercules Inc. (b) | 41.0 | R1 | 82 |
| Hom Site (b)(c) | 25.0 | CR | 212 |
| Civic Center Site (d) | 4 - 6 | CR | 200 - 300 |
| Commercial Site (Hercules at San Pablo) (b)(c) | 6.6 | CH | 56 |
| Franklin Canyon Golf Course Area (In Unincorporated Sphere of Influence) | 635.0 | Mix of Residential | 1,156 |
| Subtotal: (e) | 724.5 | | 1,844 |
| TOTAL DEVELOPMENT POTENTIAL: (f) | 760.4 | | 1,923 |

Notes:

(a) Based on Specific Plan and EIR, prepared for 271.4 acre site.

(b) Sites are recommended for new mixed-use zoning designations.

Assumes 50 percent of mixed-use sites developed with residential uses.

(c) Assumes site developed at medium-high density zoning (17 units/acre).

(d) Possible housing site adjacent to City Hall. Parcel is 15 acres; only a small portion is available for rezoning to residential use. New higher density zoning is assumed.

(e) Where ranges are provided the midpoint is used.

(f) Includes land zoned for non-residential uses.

** Based on zoning designations within General Plan

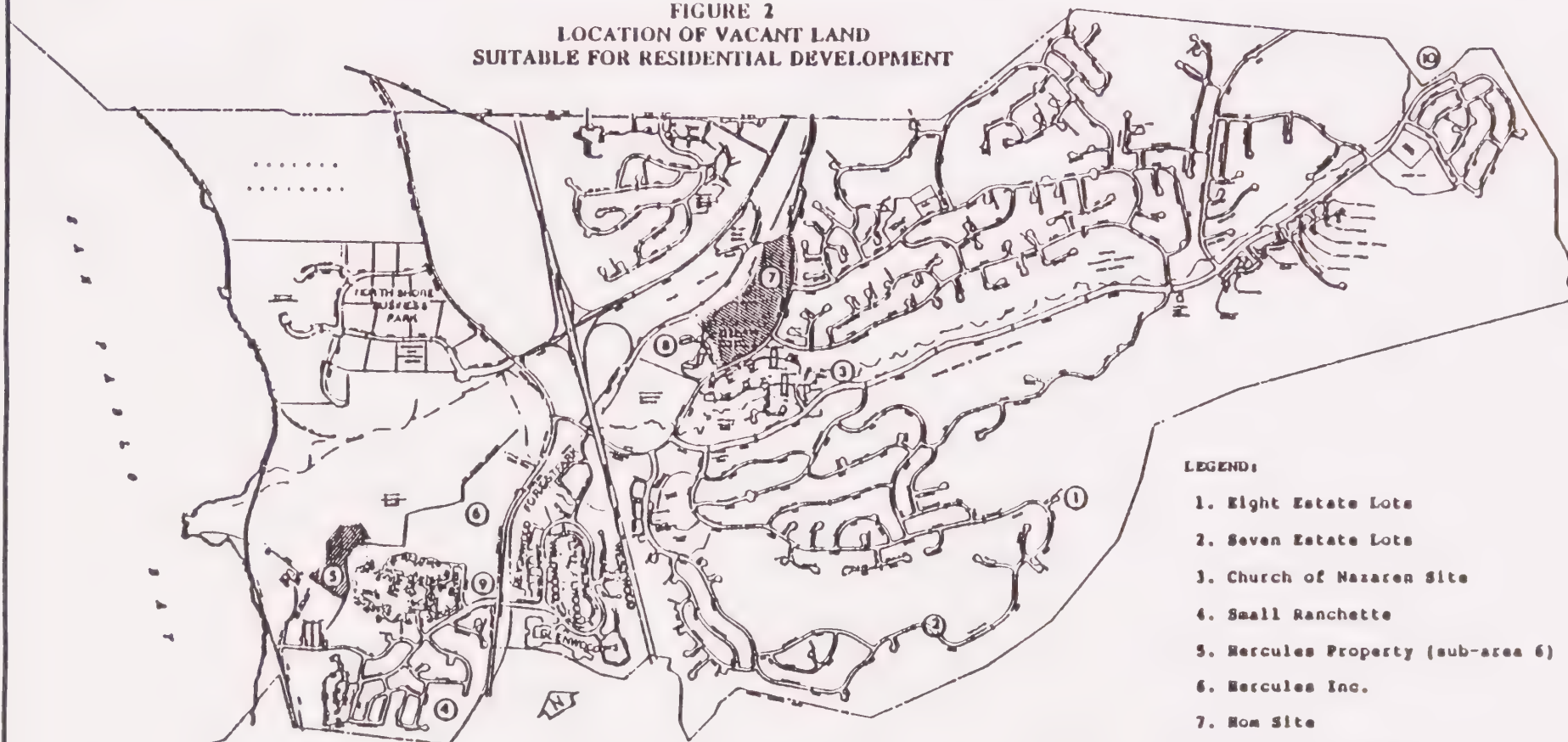
Designations R1= low density residential (approx. 4 units/acre);

R2= medium density residential (10 units/acre); R3 = medium high

density (17 units/acre); R4= high density (30 units/acre);

R5= recommended 50 units/acre.

FIGURE 2
LOCATION OF VACANT LAND
SUITABLE FOR RESIDENTIAL DEVELOPMENT



LEGEND:

1. Eight Estate Lots
2. Seven Estate Lots
3. Church of Nazaren Site
4. Small Ranchette
5. Hercules Property (sub-area 6)
6. Hercules Inc.
7. Mom Site
8. Civic Center Site
9. Commercial Site
10. Franklin Canyon Area
(Sphere of Influence)

CITY OF
HERCULES

San Francisco Bay
HERCULES DISTRICT MAP
California
Prepared by RGA ENGINEERING San Francisco

Source: Hercules Planning Department, Sedway & Associates.

IV. SPECIAL HOUSING NEEDS

Homeless

The Contra Costa Social Services Department estimates that approximately 5,000 to 6,000 people are homeless over the course of a year in the County. Conversations with the Hercules Police Department, the Richmond Mission Center, and the Contra Costa Social Services Department suggest that fewer than 20 people from Hercules are homeless in a given year. There are no facilities to house the homeless in Hercules, and service providers in the County did not have any statistics regarding the sex, age or marital status of the homeless from Hercules.

The major homeless shelters in Contra Costa County are the Richmond Mission Center and the armories in Concord and Richmond. The Richmond Mission Center, a Christian transitional homeless shelter, can accommodate 90 single males and 143 women and children per night. During the peak period at the end of the month, the Mission turns away 25 to 30 men and three to five families per night. The armories' emergency homeless shelters are open from 5:00 pm to 7:00 am during the winter months only. According to staff at the Social Services Department, 1,600 individuals stayed at the two facilities in 1989, of which approximately only five were from Hercules. These bunker-like facilities house mostly single males; according to one program director, many women do not feel comfortable staying in the armories.

In order to alleviate the homeless problem, the County is currently planning to build a year round emergency facility with the capacity to house 56 people per night. Because Hercules is a small city without a large homeless population and few services for this population, it is possible that the City could provide financial support for this new shelter and other facilities in the area.

Female-Headed Households

The 1980 Census reported that there were 1,753 households in Hercules, and 168 or 10 percent of these were female-headed. Of these 168 female-headed households, 20 percent were headed by single parents. Assuming the same proportions, there would be approximately 530 female-headed households in 1990. However, given the characteristics and costs associated with the majority of new housing, the proportion of female-headed (single-income) households has likely declined. During 1989, 83 households with 167 persons received assistance from Aid to Families with Dependent Children (AFDC). A pregnant woman on AFDC can receive a maximum grant of \$341 per month and a single parent with two children can receive a maximum grant of \$694 per month. Given the cost of housing in the City, these families would likely need to share housing, or live with relatives.

There are several shelters in Contra Costa County that provide assistance to abused women and children. The Battered Women's Alternative can house eight families and when necessary they refer women to "safe" homes throughout the County. During 1989, the Battered Women's

Alternative received 46 calls from women in living Hercules. Additionally, a seven-unit family shelter recently opened up in Pittsburgh and the Battered Women's Alternative in planning to open a 16-unit transitional shelter.

Female-headed households, especially those that are elderly, low-and moderate-income, victims of domestic violence, or single parents, face many difficulties in finding adequate housing. The City of Hercules could improve the housing situation for households headed by women by establishing a shared housing program to help make housing more affordable to single women.

Elderly

Hercules has historically had a lower percentage of seniors than the County as a whole. In 1980, 2.6 percent of Hercules' population was over 65, compared to 9.3 percent of Contra Costa County's population. (See Table 8-A) According to the Census, over 65 percent of the elderly in Hercules are Asians and Pacific Islanders. Hercules' elderly population is increasing in real numbers as well as a percentage of the total population. In 1980, 155 people were over the age of 65. According to a recent survey conducted by MIG, the elderly population has increased to 5 percent of Hercules' total population, or 825 people. The survey also found that retirees comprise 43 percent of the households with incomes below \$31,000 and 48 percent of the households with income below \$20,000.

As indicated in Table 8-B, in 1980, 75 percent of the senior population lived with other relatives or non-relatives, 15 percent were householders (heads of households who may be living alone or with others), 5 percent lived with a spouse. None lived in group quarters. Only 5 percent of the total senior population lived in rental units. The majority of the elderly in Hercules are non-householders living with other relatives. One can thus assume that most of the elderly live with their children or grandchildren in extended family households.

Hercules has no independent senior apartments, congregate care facilities, or skilled nursing homes. There are eight board and care homes in the City with a total of 44 beds, of which 17 may be used by non-ambulatory residents. Five of the homes accept some residents on SSI. Several of the board and care homes have vacancies. At present, the need for this type of senior housing is adequately met.

According to the Senior Information Center, there are only three independent senior housing complexes in West County. The closest is Bay Park, a 96 unit facility in Pinole, which has very few vacancies. The only low-income housing complex is Eskaton H. Shirley Manor in El Cerrito. Currently there is a waiting list of about 300 people for this 63 unit complex. Finally, Creekside in San Pablo has 117 one and two bedroom units and 18 vacancies.

TABLE 8-A
Age of the Population

| <u>Age</u> | <u>Hercules</u> | | <u>Contra Costa County</u> | | <u>Bay Area</u> | |
|--------------------|-----------------|--------|--------------------------------|--------|-----------------|--------|
| 65 years and older | 155 | 2.6% | 60,844 | 9.3% | 533,017 | 10.3% |
| Total population | 5,936 | 100.0% | 656,380 | 100.0% | 5,179,784 | 100.0% |

TABLE 8-B
Persons 65 or Older by Household Type, 1980

| <u>Age</u> | | | <u>Contra Costa</u> | | | |
|--------------------------------|-----------------|-----------|---------------------|-------------|-----------------|-------------|
| | <u>Hercules</u> | | <u>County</u> | | <u>Bay Area</u> | |
| <u>Family Household</u> | | | | | | |
| Householder | 24 | 15.0% | 20,958 | 34.0% | 169,903 | 32.0% |
| Spouse | 8 | 5.0% | 13,776 | 23.0% | 107,260 | 20.0% |
| Other Relatives | 113 | 73.0% | 5,512 | 9.0% | 51,282 | 10.0% |
| Non-relatives | 3 | 2.0% | 282 | 0.5% | 3,432 | 0.6% |
| <u>In Non-Family Household</u> | | | | | | |
| Male Householder | 2 | 1.0% | 3,386 | 3.0% | 35,611 | 7.0% |
| Female Householder | 5 | 3.0% | 13,423 | 22.0% | 122,673 | 23.0% |
| Non-relatives | 0 | 0% | 477 | 0.8% | 6,322 | 1.0% |
| <u>In Group Quarters</u> | | | | | | |
| Inmate of Institution | 0 | 0% | 2,809 | 5.0% | 27,854 | 5.0% |
| Other | <u>0</u> | <u>0%</u> | <u>221</u> | <u>0.4%</u> | <u>8,680</u> | <u>2.0%</u> |
| | 155 | 100.0% | 60,844 | 100.0% | 533,017 | 100.0% |

Source: U.S. Census 1980 (STF-1)

Note: Percentages may not add up to 100 percent due to rounding.

In 1980, a majority of the elderly in Hercules lived with their children or other relatives. However, according to the director of the Senior Center, a number of Hercules' residents have expressed an interest in an independent senior housing complex. Many elderly would prefer to live independently but still close to their family. At this time there are no facilities in Hercules to meet this need. Additionally, judging by the one to two year waiting list at Eskaton H. Shirley Manor and the high percentage of low-income households with retirees in Hercules, there is a great need for affordable elderly apartments in both West Contra Costa County and the City.

Although the senior population has been increasing, there is no senior housing other than board and care houses. The City may want to consider promoting or sponsoring the development of a senior housing complex, initiating a senior shared housing program, or encouraging the addition of second-units to existing homes. It is also recommended that a percentage of these units be affordable to the City's lower income elderly residents.

Disabled

The United Way estimates that there are 8,287 developmentally disabled and brain-damaged individuals living in the County. Based on this statistic, approximately one percent of the population, or 173 residents are developmentally disabled and/or brain-damaged. The above statistic does not account for individuals suffering from other types of disabilities. The 1980 Census indicates that 1.1 percent of the persons between the age of 16 and 64, and 26.1 percent of the persons 65 years of age and above had transportation disabilities, meaning there were about 40 elderly Hercules residents with mobility limitations and special housing needs (i.e. ramps, cut curbs, ground floor housing). (See Table 9-A and 9-B.) The percentage of residents 65 and older with a transportation disability in Hercules is much greater than the percentage in Contra Costa County (14.2%) and the Bay Area (14.6%).

There are few disabled individuals living independently in Hercules due to the lack of affordable housing. From conversations with the East Bay Regional Center, the Association for Retarded Citizens, and the Independent Living Center, it appears likely that most of the disabled individuals in Hercules live with relatives. Those that live independently are probably able to work and do not require public assistance.

There are no disabled housing facilities in Hercules and the one completed apartment complex is not wheelchair accessible. There is also a lack of wheelchair accessible housing in the County. For example, the Chilpancigo, a 25 unit apartment complex in Pleasant Hill, currently has a four to five year waiting list for the handicapped accessible units.

As the proportion of elderly in the City increases and as disabled children get older, disabled accessible housing will become an even greater need. New state regulations require all new rental projects to be handicap accessible.

TABLE 9-A
Non-Institutional Persons 16 to 64
By Public Transportation Disability

| <u>Status</u> | <u>Hercules</u> | | <u>Contra Costa County</u> | | <u>Bay Area</u> | |
|---------------------------------------|-----------------|---------------|----------------------------|---------------|------------------|---------------|
| With Public Transportation Disability | 41 | 1.1% | 7,408 | 1.7% | 54,184 | 1.5% |
| No Public Transportation Disability | <u>3,832</u> | <u>98.9%</u> | <u>431,770</u> | <u>98.3%</u> | <u>3,456,382</u> | <u>98.5%</u> |
| Total | 3,873 | 100.0% | 439,178 | 100.0% | 3,510,566 | 100.0% |

TABLE 9-B
Non-Institutional Persons 65 and over
By Public Transportation Disability

| <u>Status</u> | <u>Hercules</u> | | <u>Contra Costa County</u> | | <u>Bay Area</u> | |
|---------------------------------------|-----------------|---------------|----------------------------|---------------|-----------------|---------------|
| With Public Transportation Disability | 40 | 26.1% | 8,192 | 14.2% | 73,066 | 14.6% |
| No Public Transportation Disability | <u>113</u> | <u>73.9%</u> | <u>49,539</u> | <u>85.8%</u> | <u>428,927</u> | <u>85.4%</u> |
| Total | 153 | 100.0% | 57,731 | 100.0% | 501,933 | 100.0% |

Source: U.S. Census 1980 (STF-3)

Large Families

According to the Census, households of five or more persons are considered to be large. State housing standards indicate that five-person households need three or four bedrooms and six-person households need at least four bedrooms. The Census provides data on large households as opposed to large families.

In 1980, 204 individuals lived in five-person households of which eight percent lived in rental units. Another 158 individuals lived in households with six or more persons. Of this population, ten percent rented their homes. The percentage of the population living in large households is substantially higher in Hercules (21 %) than the County (11 %) and regional average (10%). (See Table 10)

In 1980, the average number of rooms per dwelling unit was 5.6 in Hercules, compared with 5.5 in Contra Costa and 5.0 in the Bay Area. There were only 35 two- to three-room units in 1980, however, this number has greatly increased due to the construction of condominiums and the Willow Glen apartment complex.

The Census does not indicate how many of these large families actually live in large enough units. There are probably a number of families who cannot afford to rent or buy as much housing as they need. In 1980, 3.7 percent, or 65 units were considered overcrowded with more than 1.01 persons per room. Of these 65 overcrowded units, 15 were considered extremely overcrowded with 1.5 persons per room. Most of the overcrowded units were owner-occupied (92.3%). Additionally, Asian and Pacific Islanders comprised 84.1 percent of overcrowded households, yet represented only 30.7 percent of the total households. Applying this percentage to the current number of households, it can be assumed that 197 units are overcrowded.

No specific data is available on large families' ability to pay housing costs, however, the Moore Iacofano Goltsman survey found that, on average, large households pay 9.3 percent more in housing costs while having the same average income level as smaller households.

Overcrowding

An overcrowded unit is defined as one in which there are more than 1.01 persons per room (including kitchens, bedrooms, living rooms, etc., but not including basements, bathrooms or halls). Given this definition, Hercules had 65 crowded units (2.9 percent) in 1980, 15 of which had over 1.5 persons per room, all but one of these was owner occupied. This was more than the County (2.9 percent), but less than the nine-county Bay Area (4.8 percent). While most of the overcrowded units in Hercules are owner-occupied, in the County and region, the majority were renter-occupied. This has to do mainly with the limited supply of rental housing present in Hercules. In general, the City's housing stock is relatively large (the median number of rooms in 1980 was 5.6, compared to 5.4 in the County and 5.0 in the region).

TABLE 10
Population Breakdown by Persons per Unit

| <u>Persons in Unit</u> | <u>Hercules</u> | | <u>Contra Costa County</u> | | <u>Bay Area</u> | |
|------------------------|-----------------|-------------|----------------------------|-------------|-----------------|-------------|
| 1-4 persons | 1,391 | 79.0% | 215,001 | 89.0% | 1,760,042 | 89.0% |
| 5 persons | 204 | 12.0% | 17,086 | 7.0% | 123,521 | 6.0% |
| 6 or more persons | <u>158</u> | <u>9.0%</u> | <u>9,447</u> | <u>4.0%</u> | <u>86,986</u> | <u>4.0%</u> |
| Total | 5,936 | 100.0% | 656,380 | 100.0% | 5,179,784 | 100.0% |

Source: U.S. Census, 1980.

In 1980, the majority of overcrowded units were occupied by Asians and Pacific Islanders, as indicated by the overcrowded housing units with complete plumbing fixtures. While these ethnic groups comprised over 30.7 percent of the population, they made up 84 percent of the overcrowded households.

Farmworkers

Agriculture is not a significant part of Hercules' economic base, and almost no one in the work force is a farmer. According to ABAG Projections 1990, only .5 percent of the population is employed in the agriculture industry. As a result, there is no need to provide special housing for farmworkers in Hercules.

Housing Discrimination

The Housing Alliance of Contra Costa County handles housing discrimination problems in the county. They have received five complaints from Hercules residents about housing discrimination in the last three years. Of the five cases, three were discrimination on the basis of race, one was discrimination on the basis of marital status, and one was discrimination against

a family with children. The Housing Alliance has not been very proactive on the discrimination issue over the last few years. Because of this, these statistics may or may not represent the entire discrimination problem in Hercules. However, the staff indicated no additional discrimination complaints had been registered with the City.

V. OTHER HOUSING ISSUES

ABAG Regional Housing Needs Determinations

State legislation enacted in 1980 requires the Association of Bay Area Governments (ABAG) to determine existing and projected Bay Area regional housing needs for persons of all income levels. ABAG also determines each city's share of the regions housing needs. The figures are based on market demand for housing, employment opportunities, land availability, commuting patterns, type and tenure of housing, and the provision of a 4.5 percent housing vacancy rate. The most recent determinations were prepared and published by ABAG in the "Housing Needs Determinations, San Francisco Bay Region", January, 1990.

Governmental Code Section 655584 (c) gives all cities and counties 90 days to review and revise the determinations contained in the ABAG report. The figures included in ABAG's 1990 report was accepted by the Hercules City Council.

Housing element updates, including the development or modification of existing housing programs, are to consider the regional housing needs. As discussed in the section on program achievements, the City of Hercules exceeded ABAG's housing needs determinations in total numbers for the 1980 through 1989 period. However, only Willow Glen has rents that even approach amounts which are affordable to households earning less than the median income. For the 1990 to 1995 period, ABAG's housing needs determinations call for the production of 1,262 units, of which 202 should be affordable to very-low income households and 152 should be affordable to low-income households. An estimated 240 units should be affordable to the City's moderate-income households, with the remaining 668 units for the above-moderate income families.

Housing production levels in Hercules will likely be close to or exceed those required by ABAG's regional needs determinations. In September 1989, there were 1,096 approved units in the City, a considerable number of which were already under construction. Where the City's performance has not kept pace with ABAG allocations is in the production of units for lower-income households. As discussed in the section on goals, policies and objectives, it is recommended that the City initiate several new programs in this five-year cycle in an effort to address the housing needs of all income categories. As part of the housing element update process, the City Council will establish priorities among the objectives and programs included in the draft document.

Housing Costs and Ability to Pay

To analyze a household's ability to pay for housing, housing cost as a percent of household income was evaluated. In general, housing costs are considered affordable if they are no more than 25 percent (state standard) to 30 percent (federal standard) of gross income. In 1980, roughly half the City's households paid more than 25 percent of their incomes toward housing costs, based on information contained in the U.S. Census. However, 92 percent of the owner-

occupants, and all the renters earning under \$20,000 (or approximately 60 percent of the County median) paid over 25 percent of their incomes toward rent. These figures indicate that as in most communities, the majority of lower-income households pay an excess proportion of their income toward rent.

It should be noted that relative to other communities, the City has a relatively small lower-income population. In 1980, four percent of the City's population was considered very-low income and five percent was considered low-income. Based upon the City's household survey results, the current proportion of lower-income households is comparable, with the percentage of very-low income households increasing slightly to five percent, and the low income population remaining at five percent of the total. .

While it is difficult to gauge the extent to which the City's households are currently overpaying for housing, general indicators in the regional and local market suggest that this situation has not improved. As indicated in Table 11, housing prices in the Bay Area over the last decade have increased about eight times as fast as incomes, rising from a median of \$115,227 to \$233,921, or an increase of 103 percent. Average incomes over this same period increased by only 13 percent. While statistics are not available to make this precise comparison for Hercules, rapid increases in the median home prices evidenced in West Contra Costa (61 percent) have also outpaced the average increases in incomes registered in Hercules (13 percent) by a significant margin.

Table 12 presents a summary of the housing costs affordable to the City's households at different income levels. As shown, the City's very-low income households can pay up to approximately \$506 per month for rent, assuming they contribute 30 percent of their income toward housing costs. The City's lower-income households are estimated to be able to afford maximum rental payments between \$506 and \$763 per month, or a house costing less than \$86,900, assuming a 20 percent downpayment. As noted previously, the existing housing prices are out of reach for the very-low income, and only a tenant at the very top of the low-income category could afford to reside in Willow Glen (where rents range from \$710 to \$745). With condominium prices currently starting at about \$100,000, only the City's moderate and above-moderate income households can afford to purchase a new home.

Data from the household survey indicate that the proportion of very-low and low-income households overpaying for housing has declined since 1980. Of the 21 households surveyed with incomes under \$20,000 (roughly comparable to the very-low income category), 67 percent indicated that they are paying less than 30 percent of gross income on housing. Of the low-income households polled (earning between \$20,000 and \$30,000), only 24 percent indicated housing costs of over 30 percent of income. Particularly unusual was the very high proportion of the lower-income households which indicated that they pay nothing for housing costs. A possible explanation for this apparent paradox, is that these households paid all cash for their home. This phenomenon is generally more common for mature householders who move to less costly homes, having previously accumulated substantial equity in larger homes through appreciation. In addition, sales agents indicated that Asian families are more likely to purchase

Table 11
City of Hercules
Home Prices and Household Incomes (1)
1980 - 1988

| | 1980 | 1985 | 1988 | % Change 1980-1988 |
|--------------------------------------|-----------|-----------|-----------|-----------------------|
| Median Home Price--Bay Area (2) | \$115,227 | \$146,451 | \$233,921 | 103% |
| Mean Household Income--Bay Area (3) | \$39,736 | \$43,300 | \$45,040 | 13% |
| Median Home Price--West Contra Costa | \$81,127 | \$100,349 | \$130,505 | 61% |
| Mean Household Income--Hercules (3) | \$51,280 | \$56,400 | \$58,118 | 13% |

- (1) Prices are based on Multiple Listing Service (MLS) sales of single family homes, townhomes, and condominiums. MLS data includes many, but not all, residential sales. It does not include sales of many newly constructed homes, particularly high end homes.
- (2) Median home prices based on December MLS sales data from the following boards: Berkeley, Contra Costa, Los Altos-Los Gatos-Saratoga-Mountain View-Sunnyvale, Marin, Palo Alto, San Jose, Southern Alameda, Oakland, and San Francisco.
- (3) Income for 1988 is based on the average yearly increase from 1985 to 1990.

Source: California Association of Realtors; West Contra Costa Board of Realtors; Association of Bay Area Governments; Sedway & Associates, February 1990.
[hhp, eca, 1.8.90]

Table 12
Affordability Analysis
Based on Median Income in Contra Costa County
Hercules, 1990

| Income Range(a) | Classification(b) | Household Population Distribution(c) | | Max. Affordable Monthly Hsg or Rent Pymt.(d) | | Housing Price @ 20 Percent Down Payment(e) |
|---------------------|-----------------------|--------------------------------------|---------|--|-------|--|
| | | Number | Percent | | | |
| Less than \$20,250 | Very Low Income | 265 | 5.00% | - | \$506 | - \$57,688 |
| \$20,251 - \$30,500 | Lower Income | 265 | 5.00% | \$506 - | \$763 | \$57,690 - \$86,888 |
| \$30,501 - \$38,150 | Moderate Income | 530 | 10.00% | \$763 - | \$954 | \$86,890 - \$108,681 |
| \$38,151 + | Above Moderate Income | 4,240 | 80.00% | \$954 + | | \$108,683 + |
| | Total Households | 5,300 | 100.00% | | | |

Notes:

(a) Income range based on HUD estimates for three person family living in Contra Costa County.

(b) Income classifications based on HUD standards.

Very low income = less than 50% of median; low income = 50% to 80% of the median;

Moderate income = 80% to 120% of the median; and above moderate income = greater than 120% of the median

(c) Household population distribution based on extrapolations from MIG survey 12/89.

Number of households based on ABAG Projections 1990.

(d) The maximum monthly housing payment is calculated as 30% of income.

(e) The maximum house price is based on a 30-year fixed rate mortgage at 10% interest rate with a 20 percent down payment.

Source: Sedway & Associates, December, 1989

{haa, nhf}

a home outright, rather than assume the long-term debt typical of most home acquisition transactions.

Even with this potentially unique group of lower-income residents, assuming 33 percent of the City's very-low income households and 24 percent of the low-income households overpay, 87 very-low income households and 64 low-income households would be currently overpaying for housing.

The profile of the City's lower-income households, compiled by Moore, Iacofano Goltsman, is summarized in Table 13. As indicated, of those earning less than \$20,000 (very-low income households), most are homeowners (86 percent) with smaller than average household sizes (2.09 compared to 3.36 Citywide). Consistent with this profile, almost half are retirees (compared with nine percent in the City as a whole), 41 percent are over the age of 65 (compared with only five percent Citywide), and only 14 percent are under the age of 20, compared to 36 percent for the City as a whole. The ethnic composition of the very-low income group also diverges somewhat from the Citywide profile. A larger percentage of the very-low income group are white (64 percent, compared to 46 percent), a lower percentage are Asian (16 percent compared to 38 percent). The percentages of very-low income hispanics and blacks are almost twice the percentages found in the general total City population.

The profile of the City's low-income households (households earning \$20,000 to \$30,000) is quite different. While there is a higher percentage of retirees, the incidence of elderly residents in this category was 13 rather than 48 percent. Further, while the household size of 3.05 is smaller than the Citywide average, it is considerably larger than the very-low income average suggesting that in general, each family with children is larger than average. Finally, of all households surveyed in this group, 52 percent were Asian, 35 percent white, none black, and only four percent Hispanic.

These profiles suggest that there are two groups of households in need of more affordable housing in Hercules: the elderly and families with children. Due to the overall limited size of these populations in need, particularly families, it likely would not be sufficient to warrant the development of any 100 percent below-market rate projects. Instead, it would be more appropriate to sponsor the development of larger, multifamily projects with a percentage of below market-rate units. There may be adequate demand for the development of a predominately below-market seniors apartment project. Due to the fact that the majority of the City's elderly residents currently live in single-family homes, development of an independent senior housing project, and not a development targeted to the more frail elderly is most appropriate.

Table 13

Profile of Low Income Households

| Household Characteristics | Households with Annual Incomes Under \$20K | Households with Annual Incomes \$20 - 30K | Low Income Households (Under \$31K) | All Households* |
|---------------------------|---|---|---|--|
| % of Sample* | 5.4% | 5.4% | 11% | 100% |
| Household Size | 2.09 | 3.05 | 2.57 | 3.36 |
| Tenure | 86% own 14% rent | 86% own 14% rent | 86% own 14% rent | 92% own 8% rent |
| Full-Time Wage Earners** | .38/hh 24% | .91/hh 62% | .64/hh 43% | 1.60/hh 89% |
| Part-Time Wage Earners** | .10/hh 5% | .10/hh 10% | .10/hh 7% | .23/hh 18% |
| Retirees | 48% | 38% | 43% | 9% |
| Age | 12% 0 - 16 2% 16 - 20 39% 21 - 40 7% 41 - 65 41% 65+ | 27% 0 - 16 6% 16 - 20 24% 21 - 40 29% 41 - 65 13% 65+ | 21% 0 - 16 5% 16 - 20 30% 21 - 40 19% 41 - 65 25% 65+ | 28% 0 - 16 8% 16 - 20 33% 21 - 40 26% 41 - 65 5% 65+ |
| Ethnicity | 64% White 2% Filipino 0% Other Asian 14% Chinese 11% Black 9% Hispanic | 35% White 38% Filipino 5% Other Asian 9% Chinese 0% Black 4% Hispanic | 47% White 22% Filipino 3% Other Asian 11% Chinese 5% Black 8% Hispanic | 46% White 17% Filipino 14% Other Asian 7% Chinese 6% Black 5% Hispanic |
| Education Level | 0% Elem Sch 21% High Sch 12% HS Grad 33% College 24% * Grad 9% Grad Sch 0% Prof Sch | 7% Elem Sch 27% High Sch 20% HS Grad 17% College 22% * Grad 4% Grad Sch 2% Prof Sch | 4% Elem Sch 23% High Sch 21% HS Grad 24% College 22% * Grad 6% Grad Sch 1% Prof Sch | 1% Elem Sch 9% High Sch 18% HS Grad 28% College 32% * Grad 8% Grad Sch 4% Prof Sch |

* Total households responding to Question 19: 386 (86% of total survey sample of 450).

** The top number indicates the average number of wage earners per household in the sub-sample; the bottom number refers to the percentage of these households indicating at least 1 wage earner in the specific category (full-time or part-time).

Energy Conservation Opportunities

Recent legislative actions in California are increasingly calling upon cities to play a crucial role in promoting energy conservation and solar energy in residential development. Revisions to State energy efficiency standards for new homes require rigorous compliance with a set of energy conservation standards. These are in the California Energy Commission's Title 24 standards, enforceable by local building departments. The Solar Rights Act of 1978 requires that local governments review tentative maps for use of natural heating and cooling (or passive) opportunities in new subdivisions. The State Office of the Attorney General has concluded that failure to meet the design standards could be grounds for disapproval of a tentative map by the local government.

The age of a housing unit is a rough indicator of its energy efficiency. As noted previously, the great majority of housing in Hercules was constructed since 1980. As such, the City's housing stock generally incorporates energy saving devices and construction techniques.

VI. STATUS AND EVALUATION OF EXISTING PROGRAMS

In compliance with State law, this section summarizes the City's achievements in satisfying its housing needs. The 1984 housing element described six housing goals addressing the issues of: expanding the supply of a range of housing types to accommodate the region's population; maintaining and improving the quality of the existing stock as well as the quality of existing and new neighborhoods; promoting energy conservation; promoting equal housing opportunity; and citizen participation in implementing the housing element. To accomplish these tasks, the City identified 18 policies and 40 actions. Following is a summary of the City's achievements as they relate to specific Actions from the 1984 element.

PRODUCTION

Overall production goals as established by ABAG identified the need for 3,145 new residential units to be developed between 1980 and 1990 (1984 housing element, pg. IV-24). During the first nine years of the decade 3,554 new units have been added to Hercules, exceeding the regional share of housing production need.

During this same period, the City had delineated a policy of expanding the available housing types. Toward that end, the proportion of multifamily homes increased from a nominal percentage of the housing stock to forty percent of the units added in the last five years. Further, the first rental housing project was constructed (Actions 1.a, 1.b, 1.c, 1.d, 3.a, 3.b, 3.c, 4.g, 2.h).

The City has not provided its fair share of affordable housing. Over the ten-year period, ABAG estimated that 48 percent of the units, or 924 units should be affordable to very-low and low-income households. The new 84-unit apartment project is theoretically affordable to the City's low-income households, while no units were developed that meet the housing needs of the very low income (Actions 1.e - 1.i, 2.d, 4.h).

AFFORDABLE HOMEOWNERSHIP PROGRAMS

During the previous five-year period, two programs increased the affordability of homeownership for the City's moderate-income households. First, the City has participated in the home mortgage revenue bond programs sponsored by Contra Costa County (Action 1.c). During the last five years, 178 purchasers benefitted from a lower interest mortgage. In addition, in 1985 the City established the Homeownership Opportunity Program (HOP) (Action 1.g). This program, administered through the Redevelopment Agency, utilizes the City's 20 percent tax increment set aside to provide deferred second mortgages to qualifying moderate-income households. Under the HOP program, a silent second mortgage up to 15 percent of the purchase price would be contributed by the City. No mortgage payments are due under the program guidelines until the home is sold or refinanced. Ten HOP loans were executed during the period. However, due to the purchase price maximum of \$110,000, few homebuyers have been able to

find a qualifying unit in the recent past, and no HOP loan has been issued for the past 15 months. Also, implementing this program consumes substantial staff resources. If this program is continued, it is recommended that the City examine the program parameters to increase demand for the program. In particular, it is suggested that the maximum home price be increased.

As discussed more fully in the following section, the City has not adequately addressed the housing needs of its very-low and low-income residents. As outlined in the revised program section of this document, the City is attempting to address this deficit by revising and expanding its housing goals and established several new housing programs.

Other City actions identified in the previous element include maintaining the existing stock (Actions 2.a - 2.h). Limited publicly-sponsored activities were undertaken to promote housing conservation, however as noted previously, the City's stock is relatively new and a windshield survey identified little housing deterioration. In terms of neighborhood maintenance, several approaches to approving compatible building design are promoted by the City, including Planned Unit Developments and ongoing maintenance of public improvements (Actions 3.a -3.f).

Energy conservation standards are promoted through the enforcement of California residential energy conservation standards and permitting solar design and other energy conserving construction techniques (Actions 4.a - 4.i).

Equal opportunity programs involve supporting the Housing Alliance of Contra Costa County and other local organizations providing counseling and handling housing discrimination complaints (Actions 5.a - 5.c). This program is continued in the element update.

The previous element identified involving the citizens of Hercules in the housing element programs and update process (6.a - 6.b). This action has been satisfied, as evidenced by the current update process, which included a series of public hearings and workshops to spell out newly-considered housing programs, a mailing to community organizations and homeowners groups inviting public comment, and widely-advertised hearings.

VII. CONSTRAINTS TO DEVELOPMENT

Governmental Constraints

The State's "Summary of the standards used in the review of local housing elements" says the "purpose of a constraints analysis is to identify those governmental and nongovernmental factors unique to the community that inhibit the development, maintenance, or improvement of housing." Following is a brief discussion of the factors that may impede the development of housing in Hercules.

Land Use Controls

The City of Hercules has three multifamily zoning categories which allow for between ten and 30 units per acre. The City's municipal code has a per unit open space requirement for each of these categories. In the R-2 District, 1,500 square feet of open space must be provided per unit. In the R-3 and R-4 Districts, a minimum of 300 square feet of open space must be provided per unit. While these requirements may result in a more aesthetically pleasing design and provide an open space amenity for the project residents, such a requirement may increase the cost of development, which is generally translated into higher costs to the consumer.

A second land use constraint relates to the minimum lot sizes mandated for multifamily projects. Under Section 10.1.405 of the Municipal Code it states that development in the R-2 District requires a minimum of five acres, resulting in a minimum project size of 50 units. In the R-3 and R-4 District, the minimum lot size is three acres: providing for a minimum 51-unit project in the R-3 District and a 90-unit project in the R-4 District. To the extent that there are other, smaller sites suitable for multifamily housing, higher-density projects are forfeited. This constraint has been addressed in the recommended creation of two new zoning and general plan classifications, one which allows for a mixed residential/commercial District, and the other which creates a higher-density zoning classification.

Other land use controls are typical of surrounding communities and do not represent unique development constraints.

Development Fees and Dedications

Like most communities, the City of Hercules charges significant fees in order to pay the costs of infrastructure and services necessary for growth. Currently, fees are negotiated through a development agreement. As an example, a typical four bedroom single-family home which has an average construction cost of \$82.50 per square foot to build would be assessed about \$6,067 in processing fees, and about \$7,153 in one-time impact fees and utility charges, including: a

\$940 traffic impact fee, a \$1,608 school impact fee, a \$1,500 growth management fee, and a \$410 growth impact fee, for a total of \$13,220 in typical fees per unit as of February, 1990. Fees for development of an eight-unit multifamily project are estimated at \$44,358, or \$5,548 per unit. (A summary of the planning and development fees is included in Appendix A.)

Infrastructure and Utilities

Discussions with the City's utility districts indicates that there is adequate capacity to accommodate the growth forecast over the next five-year period, particularly in the incorporated areas of the City. Pacific Gas & Electric (PG&E) indicated that all parts of the incorporated City have access to gas and electricity, but unincorporated areas of the City have no gas service.

Extending utilities and services to the unincorporated Franklin Canyon area is likely to add substantially to the cost of housing there. The primary utility cost will involve extending the water main almost one-quarter mile to provide domestic water and water for firefighting, and extending the sewer line. A supplemental EIR is currently being prepared and will further document these costs.

Additionally, the developer of Franklin Canyon will be required to pay for the construction of an 11-person fire station at an estimated cost of \$1 million.³ The cost of two pieces of equipment, estimated at about \$300,000, may also be borne by the developer. The up-front capital outlay is not expected to dissuade developers in ultimately building out the Franklin Golf Course area, but will likely result in a residential product that is not affordable to the low- and very-low-income residents.

Finally, the Franklin Canyon developer will be responsible for providing the up-front monies needed to extend gas service to the area. The majority of this funding will be reimbursed by PG&E.

Water service is provided to the City by East Bay Municipal Utilities District (East Bay MUD). Discussions with the facilities planner for the District indicated that there is ample capacity to handle the growth projected for the City. Extending services to the Franklin Canyon area may require upgrading or replacing the existing pipeline and main. This would result in some additional expense to the developer. Water mains are estimated to cost approximately \$25 to \$30 per linear foot to install.

While there is currently adequate sewer capacity, projected development over the next five years would likely consume most of the remaining capacity. At present, the District is operating at 85 percent of capacity, and treats 1.4 million gallons of sewage per day. Extending service to Franklin Canyon will be costly to the developer, and require new treatment capacity.

³Based on discussions with Mr. Pedro Jimenez, Fire Chief, Rodeo/Hercules Fire District.

To accommodate long-term growth, two expansion plans are being investigated, with costs for one approach estimated at \$15 million, and a less costly upgrade plan estimated at six to ten million dollars. The District hopes to resolve the issue by summer. Various funding methods are under consideration to finance the plant expansion including an assessment district and a new tax system.

Limited Funding For State and Federal Affordable Housing Programs

Throughout the Bay Area, and nation generally, a significant constraint to providing affordable housing has been the declining amount of federal funds available for housing. Popular programs which had long supplemented local initiatives have all but dried up. Nonetheless, there are some remaining programs or subsidies which could contribute to the supply of affordable housing in Hercules. These include the Section 8 rental subsidy program, HUD Section 202 Senior and Handicapped Housing program and others. The City of Hercules does not currently participate in nor solicit funding from these sources. As indicated in the program section of this document, it is recommended that the City reaffiliate with the Contra Costa County Housing Authority, in an effort to take advantage of appropriate programs, as funding permits. The majority of the County's smaller cities do not establish their own Housing Authorities, but rather work through the County.

Nongovernmental Constraints

Ordinary nongovernmental constraints to the development of housing such as financing costs, speculation, and labor costs are not specific to Hercules and are not addressed herein. Further, on average, housing costs are more affordable than many of the surrounding communities in the Bay Area. The following constraints represent those most unique to Hercules:

Limited Employment Opportunities

The City of Hercules currently faces a substantial jobs/housing imbalance. That is, the majority of employed residents work outside the City. The extent of out-commuting impacts local street networks and, particularly, Interstate 80. However, as noted earlier, the City serves an important regional role in housing residents that are employed in San Francisco and Oakland where housing is generally more expensive. Additionally, the City has an extensive inventory of vacant, commercially zoned land. One of the primary goals of the City is to promote balanced commercial development, both to contribute to the local employment base generally, as well as to generate additional public revenues to maintain the quality of public services.

Land Availability and Home Costs

Until recently, Hercules had an ample supply of relatively affordable land for housing compared to much of the inner Bay Area. However, new home prices in Hercules have been escalating due to two factors. First, since home prices throughout the Bay Area are at all-time highs, more and more moderate-income purchasers are being pushed further from the inner Bay Area to outer

Bay Area communities such as Hercules. Second, the largest inventory of remaining vacant land in Hercules is in the Franklin Canyon area which is projected to be very costly to develop. In the future, these factors of strong demand and limited land availability will likely be reflected in additional price increases.

Important components of housing costs include land, construction and financing. Discussion with new residential developers indicates the typical construction cost is about \$65 to \$70 per square foot, resulting in an average cost of more than \$63,000 in hard costs alone for the construction of a prototypical 900 square foot apartment or condominium. Assuming thirty percent in soft costs and about \$50,000 in improved land costs results in a unit valued at a minimum of \$132,000. Debt service on this amount alone would require payment of more than \$926 per month at 10 percent interest and 20 percent down. Higher interest rates would further exacerbate the affordability problem. Comparing these figures to Hercules' current income profile, the average household in the area would not be able to afford a new apartment or condominium. Thus, the only hope to encourage greater affordability is to offer local incentives or to directly participate in providing housing through a contribution of land or other resources. The City is currently considering several programs which will enhance the affordability of new housing, including the possibility of donating a portion of City-owned land for an affordable senior housing project.

Rental Units

The 1986 Federal tax law changes have eliminated many of the tax advantages associated with developing rental housing. The result has been that few market rate apartments have been built in the Bay Area, especially outside of the more urbanized areas where higher densities can assist in offsetting high land costs. In tandem with the overall dampening of the rental housing market, rapidly increasing land prices make all but luxury or assisted projects economically difficult. While this situation is not unique to Hercules, the City has a dearth of rental units. Several new programs are aimed at increasing the supply of rental, including adopting a secondary unit ordinance, and creating a higher-density zoning District.

VIII. HOUSING GOALS, POLICIES AND PROGRAMS

The following housing goals, policies and programs have been adopted to meet the City's regional housing needs, and they are consistent with the City's overall agenda. These goals, policies and programs promote the development of a balanced, well-integrated community which satisfies its residential and employment needs.

PROGRAM PRIORITIES

Because the supply of vacant land is rapidly diminishing in Hercules, the task of meeting housing needs is becoming more challenging. Further, the City has many pressing needs, only some of which pertain to housing. In recognition of the City's broad agenda and limited land, staff and budget resources, programs have been prioritized for each housing goal and policy. Programs are listed below with their respective priority designations, "priority" or "not having priority". Each "priority" program will be proactively implemented by the City during the five-year planning period this housing element is effective. Each program designated as "not having priority" is endorsed by the City, but, due to the City's limited resources, will only be implemented during the five-year planning period if a party approaches the City with a viable, reasonable concept that incorporates a nonpriority program.

GOAL 1: HOUSING PRODUCTION AND AFFORDABILITY

GOAL: Provide a sufficient number of affordable housing units to meet the needs of current Hercules residents and provide a fair share of the market area housing needs, as outlined by the Association of Bay Governments.

Policies: 1.1 On a City-wide basis, increase the number of housing units for persons within the various household income levels to meet the need for additional housing during the 1990-1995 period. This objective is to add the following number and percent of housing units during the five-year period:

| | <u>Very low Income</u> | <u>Low Income</u> | <u>Moderate Income</u> | <u>Above Moderate Income</u> | <u>TOTAL</u> |
|------------|----------------------------|-----------------------|----------------------------|----------------------------------|--------------|
| # of Units | 202 | 151 | 240 | 669 | 1,262 |
| Percent | 16% | 12% | 19% | 53% | 100% |

1.2 New housing development should include a variety of home designs, at various densities and price levels, both lower and higher than presently available.

- 1.3 Seek all available resources, including tax-increment revenues, in-lieu fees, and State and Federal monies, to help meet its objectives for the provision of housing at the various income levels outlined above.
- 1.4 Actively support and work with non-profit housing development corporations and other housing providers to promote development of affordable housing.
- 1.5 Use redevelopment tax increment funds for housing in cooperative ventures with the private sector to preserve and increase the supply of affordable housing.
- 1.6 Preserve affordability for a minimum of 15 years for projects developed with City assistance, and for a longer period for the one City-owned site.

Programs/ Actions:

Priority:

- 1.a *Program Name:* (R-5) Multifamily Housing District
Description of Program/Action: Amend the zoning ordinance and general plan to allow additional units aimed at increasing the supply of privately produced rental housing. R-5 District to allow 3-story buildings with up to 50 units/acre. Target development of affordable housing to these sites.

Responsible Agency: Planning Department

Five-Year Objective: Adopt new designations, annually monitor the vacant/undeveloped land.

- 1.b *Name of Program:* Mixed-Use Residential/Commercial District (CR)

Description of Program/Action: Expand the potential for housing by permitting residential development in commercial areas as a mixed use and as a separate use when the design and location are appropriate.

Responsible Agency: Planning Department

Five-Year Planning Period: Create mixed use zoning district and general plan designations. Compile inventory of appropriate sites

and re-zone accordingly.

1.c *Program Name:* Mortgage Revenue Bond Financing

Description of Program/Action: Use of mortgage revenue bonds to support the development of multifamily and single-family housing for Low- and Moderate-Income households.

Responsible Agency: Planning Department

Five-Year Objective: Assist development community in pursuing bond financing through Contra Costa County for eligible multifamily projects and continue to participate in single-family bond program. Provide loans for 50 units per year, pending funding and demand.

1.d *Program Name:* Section 8 Rental Assistance

Description of Program/Action: Federal Subsidy for Low-Income Families

Responsible Agency: Redevelopment Agency, Contra Costa County Housing Authority

Five-Year Objective: Enter into a cooperative agreement with the Contra Costa Housing Authority so that they may issue Section 8 vouchers in Hercules.

1.e *Name of Program:* Inclusionary Housing Requirement

Description of Program/Action: Residential projects of 10 or more units shall be required to provide at least 10 percent of their units at levels affordable to low- or moderate-income households. The City's primary intent is the construction of units on-site. If this is not practical, the City will allow other alternatives of equal value, such as in-lieu fees, construction of units off-site, etc.

Responsible Agency: Planning Department

Five-Year Objective: Adopt and implement policy.

1.f *Name of Program:* In-Lieu Fees

Description of Program/Action: In-lieu fees to be contributed to

affordable housing fund. In-lieu fee to be based on difference between market rate units, and housing deemed affordable to moderate-income household.

Responsible Agency: Planning Department

Five-Year Objective: Adopt and implement ordinance.

Not Having Priority:

1.g *Program Name:* Housing Opportunities Program

Description of Program/Action: Use of Redevelopment set-aside for deferred second mortgage of up to 15 percent of purchase price, combined with mortgage credit-certificates (MCC's) for eligible first-time homebuyers. Targeted to moderate- and middle-income purchasers.

Responsible Agency: Redevelopment Agency

Five-Year Objective: Modify program parameters to allow home price of up to \$145,000. Develop active outreach program to advertise program availability. Issue five loans a year.

1.h *Program Name:* Density Bonus Program

Description of Program/Action: Provide 25 percent density bonus up to maximum general plan designation, in exchange for 25 percent or more low income housing. Actively seek developers to use Section 8 certificates in rental housing constructed in this way.

Responsible Agency: Planning Department

Five-Year Objective: 25 affordable units by 1995.

1.i *Name of Program:* Fast Track Processing

Description of Program/Action: Encourage the development of affordable housing units by establishing procedures for the waiver of fees and the relaxation of development standards in return for commitments to provide lower-income housing. Can be combined with density bonus program.

Responsible Agency: Planning Department

Five-Year Objective: 25-50 affordable units

1.j. *Name of Program:* Developer Outreach

Description of Program/Action: Encourage the development of housing affordable to very-low, low- and moderate-income households by enlisting the cooperation of private developers in utilizing the programs of the housing element. Provide interested developers with inventory of sites for higher density housing, including site characteristics and development potential.

Responsible Agency: Planning, Building Departments

Five-Year Objective: Ongoing

GOAL 2: HOUSING CHOICE

GOAL: Provide a selection of housing by type, tenure and price.

- Policies:
- 2.1 Provide well-designed, well-built housing units for low- and moderate-income households in mixed-density developments, including Planned Unit Development (PUD), avoiding a concentration in any limited area.
 - 2.2 Expand the number of rental units for those who cannot afford to purchase or who choose to rent.
 - 2.3 Permit secondary housing units in all single-family residential areas, where their design and site features are compatible with surrounding areas.
 - 2.4 In accordance with state legislation, manufactured housing and mobile homes, built according to current federal standards, should be permitted on permanent foundations in residential neighborhoods, providing their exterior design is compatible with the surrounding homes.

Programs/Actions:

Priority:

- 2.a *Program Name:* Insure Housing Variety

Description of Program/Action: Review development proposals and permit statistics to encourage the development of diverse housing types.

Responsible Agency: Planning Department

Five-Year Objective: Ongoing

2.b *Name of Program:* Permanent Mobile and Manufactured Homes

Description of Program/Action: In accordance with state law, revise zoning ordinances to allow placement of manufactured and mobile homes, built according with Federal standards, on permanent foundations in all residential areas with provisions for preserving neighborhood design and site standards.

Responsible Agency: Planning Department

Five-Year Objective: Adopt ordinance.

2.c *Program Name:* Self-Help Ownership Opportunities

Description of Program/Action: Investigate the feasibility of self-help housing and limited-equity cooperatives, to expand housing for low- and moderate-income households; provide information to interested citizens. Develop list of non-profit organizations that initiate, provide technical assistance, and support self-help housing.

Responsible Agency: Planning Department

Five-Year Objective: Develop and circulate list of technical assistance providers.

Not Having Priority:

2.d *Program Name:* Second Unit Ordinance

Description of Program/Action: Adopt a secondary unit ordinance to allow new units to be added on single-family developed parcels, with provision for preserving neighborhood design and site standards.

Responsible Agency: Planning Department

Five-Year Objective: Develop program parameters and adopt ordinance. Approve five secondary units.

GOAL 3: SPECIAL NEEDS

GOAL: Provide a sufficient number of housing units to meet the special needs of senior citizens, physically disabled, homeless, large families, and female-headed households.

- Policies:
- 3.1 Encourage accessible units in all projects.
 - 3.2 Encourage provision of senior housing by considering density bonuses up to general plan maximum where senior projects are desirable and compatible with special senior needs. Such projects shall only be allowed where the size of the structure and style of architecture are compatible with the surrounding neighborhood.
 - 3.3 Encourage provision of low-income housing units, especially for single persons, single parents, elderly and young families.
 - 3.4 Assist the County and social service groups to serve the City's homeless population.

Programs/ Actions:

Priority:

3.a *Program Name:* City-Sponsored Housing for the Elderly

Description of Program/Action: Promote the development of a low- and moderate-income senior apartment project on a City-owned site; consider assisting the developer by writing down the cost of the land.

Responsible Agency: City Council, City Manager, Planning Department

Five-Year Objective: Identify site, establish project parameters, solicit developer and develop 100-unit project.

3.b *Program Name:* State and Federal Assistance

Description of Program/Action: Utilize State and Federal assistance to the fullest extent possible to develop affordable lower-income housing for the elderly and disabled including CDBG funds for land write down.

Responsible Agency: Planning Department, Redevelopment Agency

Five-Year Objective: Reaffiliate with County to obtain funding. Ongoing.

3.c *Name of Program:* Barrier-Free Subdivisions

Description of Program/Action: Sidewalks on all new subdivisions required to have ramps.

Responsible Agency: Public Works Department

Five-Year Objective: Ongoing

3.d *Name of Program:* Female-Headed Household Assistance

Description of Program/Action: Provision of day-care facilities at elementary schools.

Responsible Agency: Community Services Department

Five-Year Objective: Ongoing

Not Having Priority:

3.e *Name of Program:* Shared Housing Referral Program

Description of Program/Action: Match seniors, empty-nesters, or disabled with persons to share housing costs. Also provide roommate referrals for women with children and persons in need of temporary shelter.

Responsible Agency: Planning Department

Five-Year Objective: Within planning period, establish program. As funding is available, hire coordinator.

3.f *Program Name:* Assistance for the Homeless

Description of Action/Program: Support region-wide programs and emergency shelters and transitional facilities for the homeless.

Responsible Agency: City Manager's Office/Redevelopment Agency

Five-Year Period: Investigate developing a countywide approach to address the homeless, which could include some funding for existing or new facilities and distributing a referral list to local community groups and religious organizations.

3.g *Name of Program:* Density Bonus for Senior Housing

Description of Program/Action: Provide a 25 percent density bonus for development of a senior housing project with at least 25 percent affordable units.

Responsible Agency: Planning Department

Five-Year Objective: Encourage private-sponsored senior project on suitable sites, or initiate city-sponsored project.

GOAL 4: HOUSING CONSERVATION

GOAL: Maintain and improve the quality of the existing housing stock, to assure its continued liveability and safety.

- Policies:**
- 4.1 Minimize the deterioration of the existing housing stock and the need for future rehabilitation or replacement by ensuring that at least the current level of quality is maintained, both for owner-occupied and rental units.
 - 4.2 Restore and maintain residential structures of architectural or historic significance.

Programs/Actions:

Priority:

4.a *Program Name:* Enforcement of Municipal Codes

Description of Program/Action: Enforce municipal codes (housing, health and safety, building) in both new construction and rehabilitation projects.

Responsible Agency: Planning and Building Departments

Five-Year Objective: Ongoing

4.b *Program Name:* Historic Building Code

Description of Program/Action: Building officials can use this more lenient code to facilitate rehabilitation or maintenance of historic buildings.

Responsible Agency: Building Division

Five-Year Objective: Ongoing

Not Having Priority:

4.c *Program Name:* Residential Rehab Loans

Description of Program/Action: Explore use of mortgage revenue sources for low-interest loans for rehabilitation of low- and moderate-income rental and owner-occupied housing.

Responsible Agency: Redevelopment Agency

Five-Year Objective: Investigate feasibility of cooperation with County to obtain financing, if needed.

4.d *Program Name:* Support Neighborhood Groups

Description of Program/Action: Support the creation and maintenance of neighborhood and homeowners groups that will foster pride and promote improvement of homes and neighborhoods; provide information and assistance, where appropriate, on home-repair and maintenance.

Responsible Agency: Planning Department, Redevelopment Agency.

Five-Year Objective: Ongoing.

GOAL 5: NEIGHBORHOOD CONSERVATION

GOAL: Maintain the quality of existing neighborhoods and encourage the development of attractive, viable new neighborhoods.

- Policies:**
- 5.1 Where appropriate, encourage residential uses in commercial areas, and limited commercial uses in residential areas to promote access to services.
 - 5.2 Design new residential areas to avoid conflict with major streets or thoroughfares, to have access to transit facilities, and to encourage safe and convenient alternatives to the private auto.
 - 5.3 Provide and maintain municipal services and facilities at adequate levels in all residential neighborhoods, to meet current standards.

Programs/Actions:

Priority:

5.a *Program Name:* Public Transportation

Description of Program/Action: Encourage developers of new residential areas to work with transit agencies in the design and location of bus stops, turnouts, pavement materials and the timing of development in relation to transit service needs.

Responsible Agency: Planning Department

Five-Year Objective: Ongoing

5.b *Program Name:* Internal Circulation System

Description of Program/Action: To promote safe and well-designed neighborhoods, encourage new residential development to have an internal circulation system, including pedestrian walkways, bikeways, and access to transit facilities.

Responsible Agency: Planning Department.

Five-Year Objective: Ongoing

Not Having Priority:

5.c *Program Name:* Citizen Participation

Description of Program/Action: Involve neighborhood groups in decisions on developments and major improvements. Support creation and maintenance of neighborhood and homeowner groups to foster pride and promote improvement.

Responsible Agency: Planning Department

Five-Year Objective: Ongoing

5.d *Program Name:* Infrastructure Improvements

Description of Program/Action: Regularly assess the condition of capital improvements in all residential areas; schedule maintenance and repairs as needed.

Responsible Agency: Public Works

Five-Year Objective: Ongoing

GOAL 6: ENERGY CONSERVATION

GOAL: Promote energy conservation in new and existing residential units and neighborhoods with energy efficient design and placement of new housing as a priority.

- Policies:**
- 6.1 Require timely and full compliance by the building industry with the California residential energy conservation standards and with the Solar Rights Act.
 - 6.2 Encourage the use of solar systems, both active and passive designs, in new residential development.
 - 6.3 Promote efficient patterns of development, such as clustering townhouses, duplexes, multifamily construction, and mixed uses.
 - 6.4 Encourage the retrofitting of existing homes with energy conservation measures and solar systems where feasible and cost-effective.

Programs/Actions:

Not Having Priority:

6.a *Program Name:* Education Program

Description of Program/Action: List energy conservation techniques, explain available tax credits, identify other financial incentives.

Responsible Agency: Planning and Building Departments

Five-Year Objective: Ongoing

6.b *Program Name:* Solar Access Ordinance

Description of Program/Action: Ensure the provision of sun rights to homeowners with passive and active solar systems.

Responsible Agency: Planning Department

Five-Year Objective: Consider the adoption of this plan.

6.c *Program Name:* Solar Rights of 1978 Act (Sec. 65850.5 and Sec. 17959.1)

Description of Program/Action: Modify local codes and ordinances to eliminate barriers to the use of solar systems in new developments, as required by the Solar Rights Act. (i.e., local zoning requirements, such as setbacks, lot acreage, height limits.)

Responsible Agency: Planning Department

Five-Year Objective: Consider modifying local codes by 1992.

6.d *Program Name:* Pool Heating Ordinance

Description of Program/Action: This ordinance would prohibit the use of fossil fuels for pools in new developments.

Responsible Agency: Building Department

Five-Year Objective: Consider adoption of ordinance.

6.e *Program Name:* Energy Conservation for New Subdivisions

Description of Program/Action: Zoning ordinance encourages efficient street layout, bike and pedestrian paths.

Responsible Agency: Planning Department

Five-Year Objective: Ongoing

GOAL 7: EQUAL OPPORTUNITY

GOAL: Promote equal housing opportunity and access for all persons and families regardless of age, race, ethnicity, religion, sex, family composition, or disability.

- Policies:**
- 7.1 Eliminate discrimination in housing which is based on arbitrary and illegal criteria such as race, age, ethnicity, religion, sex, income, family composition, or disability.
 - 7.2 Establish a means to facilitate resolutions of problems and conflicts which may occur in tenant-landlord disputes.

Programs/Actions:

Priority:

7.a Program Name: Equal Opportunity Education Program

Description of Program/Action: Publicize the City's non-discrimination policies among realtors, builders and the community at large.

Responsible Agency: Planning Department

Five-Year Objective: Ongoing

7.b Program Name: Anti-Discrimination Program

Description of Program/Action: Cooperate with and support the Housing Alliance of Contra Costa County and other locally-based organizations providing information, counselling and referral services and handling complaints of discrimination in housing.

Responsible Agency: Planning Department and the Housing Alliance of Contra Costa County.

Five-Year Objective: Ongoing

Not Having Priority:

7.c *Program Name:* Tenant-Landlord Dispute Resolution

Description of Program/Action: Support the Housing Alliance of Contra Costa County as an information and referral service to assist tenants and landlords in resolving disputes.

Responsible Agency: Planning Department

Five-Year Objective: Ongoing

GOAL 8: HOUSING ELEMENT

GOAL: Ensure citizen understanding of Hercules' housing needs and program options, and promote broad participation in the implementation of the housing element.

- Policies:
- 8.1 Encourage public input to the review and update of Hercules' housing element.
 - 8.2 Provide information on the City's housing needs and programs for meeting those needs to interested organizations and individuals.

Programs/Actions:

Not Having Priority:

8.a *Program Name:* Citizen Participation in Housing Policies

Description of Program/Action: Hold public meetings to receive public input, and to inform residents and those doing business with the City regarding housing needs, resources and program options.

Responsible Agency: Planning Department

Five-Year Objective:: Ongoing

8.b *Program Name:* Housing Element Information for Interested Parties

Description of Program/Action: Consolidate Housing Element policies, relevant codes, and housing needs to guide implementation, to inform those doing business with the City, and to inform the general public.

Responsible Agency: Planning Department

Five-Year Objective:: Ongoing

8.c *Program Name:* Housing Element Statistics

Description of Program/Action: Maintain statistics per the objectives and programs of the Housing Element.

Responsible Agency: Planning Department

Five-Year Objective: Ongoing

8.d *Program Name:* Housing Program Coordinator

Description of Program/Action: Designated staffperson responsible for producing and carrying out the programs of the housing element including proactive involvement in development of affordable housing.

Responsible Agency: Planning Department

Five Year Objective: Hire staffperson

APPENDIX A
SUMMARY OF PLANNING AND DEVELOPMENT FEES
BASED ON EXISTING DEVELOPMENT AGREEMENTS

| FEE | TYPICAL SINGLE FAMILY HOME (a) | TYPICAL MULTI- FAMILY BUILDING (b) | COMMENTS |
|---|---|---|---|
| I. PROCESSING FEE | | | |
| A. Planning Department | | | |
| 1. Tentative Map Filing Fee (c) | \$300 | \$440 | Additional cost of \$20 per unit |
| 2. Final Map Filing Fee (c) | \$300 | \$405 | Additional cost of \$15 per unit |
| 3. Design Review (Estate Lots) (d) | NA | NA | \$400 for estate lots; otherwise cost incurred |
| 4. Fire Protection Impact Fee | \$510 | \$1,360 | \$1.17 per square foot |
| B. Engineering Department | | | |
| 1. Plan Check Fee (e) | \$275 | \$275 | 5.5% of infrastructure construction cost |
| 2. Grading (e) | \$275 | \$275 | 5.5% of grading cost |
| 3. Sewer Connection | \$1,700 | \$1,700 | |
| C. Building Department | | | |
| 1. Filing Fee | \$20 | \$20 | |
| 2. Building Permit | \$1,153 | \$2,514 | |
| 3. Plan Check Fee | \$865 | \$1,885 | 75% of building permit fee |
| 4. Plumbing Permit Fee | \$231 | \$503 | 20% of building permit fee |
| 5. Electrical Permit Fee | \$206 | \$377 | 15% of building permit fee |
| 6. Mechanical Permit Fee | \$136 | \$251 | 10% of building permit fee |
| 7. Insulation Permit Fee | \$86 | \$189 | 7.5% of building permit fee |
| D. East Bay Municipal Water District | | | |
| 1. Filing Fee | \$10 | \$10 | |
| II. IMPACT FEES/UTILITY FEES | | | |
| A. Planning Department | | | |
| 1. School Impact Fee | \$1,608 | \$4,288 | \$536 per bedroom after first |
| 2. Traffic Mitigation Fee (f) | \$940 | \$7,520 | |
| 3. Growth Impact Fee | \$410 | \$3,281 | |
| 4. Community Development Tax | \$1,500 | \$12,000 | |
| B. East Bay Municipal Water District | | | |
| 1. System Capacity Charge (based on 5/8 in. & 1 in. meter) | \$1,135 | \$5,480 | Multifamily: \$685 per unit for the first ten units and \$545 per each additional unit |
| 3. Installation on Existing Main | \$1,560 | \$1,585 | 2 in. meter installation cost is \$2,290 |
| TOTAL | \$13,220 | \$44,358 | |

-
- (a) Based on an average 4 bedroom 2.5 bath 3,000 square foot single family detached home with an assumed construction cost of \$82.26 per square foot. Does not include Design Review.
- (b) Based on an average 8-unit multifamily building with an assumed construction cost of \$82.26 per square foot, and 1,000 square feet per unit. Does not include Design Review.
- (c) Fees are per lot, or per unit where one or more lots have more than one unit per lot.
- (d) Design Fee for subdivision and multi-family projects not included.
- (e) \$5,000 for the infrastructure cost and \$5,000 for the grading cost are based on an estimation from the engineering department.
- (f) Represents average fee. Actual fee varies with the Development Agreement for each subdivision.

Source: Hercules Planning Department; East Bay Municipal Water District; Sedway & Associates.
[fees2.sam.2/22/90] Date Printed: 07/16/90

APPENDIX B

GLOSSARY OF TERMS

"Accessible Housing": Units that are accessible and adaptable to the needs of the physically disabled.

"Affordable Housing": The generally accepted measure of affordable housing means spending no more than 25-33 percent of one's gross income on housing costs. For example, a beginning school teacher earning \$20,000 per year can afford to pay up to \$550 per month for housing. A beginning policeman or fire fighter earning \$26,000 per year can afford up to \$715 per month.

"Affordable Units": All dwelling units made available at prices or rents below market rate. Affordable units include units affordable to households with very low-income, low-income, and moderate-income.

"Employed Resident": A worker who lives in a given location but could work anywhere.

"Employee": Someone who works at a given location. Workers with routes (travelling salespersons, etc.) are considered employees at the place where they are dispatched from.

"Family": A group of people related by blood or marriage. Not to be confused with "household."

"Household": One or more persons who share a dwelling unit. Not to be confused with "family."

"Housing Need": A local share of the regional housing units assumed by the Association of Bay Area Governments (ABAG) to be "needed." Housing need is distinguished from housing demand, which is sensitive to the marketplace. Housing projections represent probable (rather than desired) levels of housing activity in each jurisdiction of the Bay Area.

"Housing Unit": The official nomenclature of the U.S. Census. A housing unit must have a separate entrance from other housing units but need not have separate kitchen facilities.

"Infrastructure": The grid of public capital improvements (roads, water and sewer) that is necessary to make urban development (including housing) occur. Essential infrastructure is that infrastructure which must be in place for the house to be habitable.

"Low-Income Households": Households earning 50-80 percent of the median household income.

"Market-Rate Units": Market-rate units are those dwelling units available at prices or rents at or above market-rate, which are those prices or rents determined by the marketplace. When market prices or rents are bid up, many households are unable to compete for housing in the marketplace.

"Median Household Income": The middle point at which half of the City's households earn more and half earn less.

"Moderate-Income Households": Households earning 80-120 percent of the median household income.

"Persons per Household (PPH)": The statistical average number of persons in a household.

"Second Unit": A separate dwelling unit that is either attached to another dwelling unit or completely detached from another dwelling unit.

"Very Low-Income Households": Households earning less than 50 percent of the median household income.

"Unit": A basic way of counting homes. The number of units is the number of homes.

OPEN SPACE/CONSERVATION ELEMENT
OF THE GENERAL PLAN

V.

APPROVED BY THE CITY COUNCIL

V. THE OPEN SPACE/CONSERVATION ELEMENT

A. AUTHORITY

1. Open Space

Government Code Section 65302(e) and 65560 et seq. requires an open space element in all city and county general plans. Section 65563:

"On or before December 31, 1973 every city and county shall prepare, adopt, and submit to the Secretary of the Resources Agency a local open space plan for the comprehensive and long-range preservation and conservation of open space land within its jurisdiction."

Section 65562:

"It is the intent of the Legislature in enacting this article:

- a) To assure that cities and counties recognize that open space land is a limited and valuable resource which must be conserved wherever possible.
- b) To assure that every city and county will prepare and carry out open space plans which, along with state and regional open space plans, will accomplish the objectives of a comprehensive open space program (added by Stats. 1970, c. 1590, p. 3316, Section 15.)"

Section 65561:

"The Legislature finds and declares as follows:

- a) That the preservation of open space land, as defined in this article, is necessary not only for the maintenance of the economy of the State, but also for the assurance of the continued availability of land for the production of food and fiber, for the enjoyment of scenic beauty, for recreation and for the use of natural resources.
- b) That discouraging premature and unnecessary conversion of open space to urban uses is a matter of public interest and will be of benefit to urban dwellers because it will discourage noncontiguous development patterns which unnecessarily increase the costs of community services to community residents.
- c) That the anticipated increase in the population of the State demands that cities, counties, and the State at the earliest possible date make definite plans for the preservation of valu-

able open space land and take positive action to carry out such plans by the adoption and strict administration of laws, ordinances, rules and regulations as authorized by this chapter or by other appropriate methods.

- d) That in order to assure that the interests of all its people are met in the orderly growth and development of the State and the preservation and conservation of its resources, it is necessary to provide for the development by the State, regional agencies, counties and cities, including charter cities, of statewide coordinated plans for the conservation and preservation of open space lands.
- e) That for these reasons this article is necessary for the promotion of the general welfare and for the protection of the public interest in open space land (added by Stats. 1970, c. 1590, p. 3315, Section 15)."

2. Conservation

Government Code Section 65302(d) requires a conservation element of all city and county general plans as follows:

A conservation element for the conservation, development, and utilization of natural resources, including water and its hydraulic force, forests, soils, rivers and other waters, harbors, fisheries, wildlife, minerals, and other natural resources. That portion of the conservation element including waters shall be developed in coordination with any county-wide water agency and with all district and city water agencies which have developed, served, controlled or conserved water for any purpose for the county or city for which the plan is prepared. The conservation element may also cover:

- a) The reclamation of land and waters.
- b) Flood control.
- c) Prevention and control of the pollution of streams and other waters.
- d) Regulation of the use of land in stream channels and other areas required for the accomplishment of the conservation plan.
- e) Prevention, control and correction of the erosion of soils, beaches and shores.
- f) Protection of watersheds.
- g) The location, quantity and quality of the rock, sand and gravel resources.

B. RESEARCH AND ANALYSIS

1. Introduction

The open space conservation element is concerned with the conservation, development and utilization of the natural resources within the city. These resources include:

- Water Quality
- Hydrology
- Land Resources
- Vegetation
- Wildlife

2. Water Quality

a. Wastewater Management

The City of Pinole Wastewater Treatment Facility is a secondary biological plant capable of modification to meet expected changes in water quality standards and/or growth in the two cities.

Both Hercules, Inc. and Sequoia Refining operate industrial treatment facilities: Hercules discharging into a tributary of Refugio Creek and Sequoia discharging to the estuary. Both treatment facilities meet current standards. Increased standards can be expected in the future requiring periodic upgrading of the facilities.

A sub-basin study is currently being prepared by a joint powers agency for West Contra Costa County. This study will provide a facilities plan and implementation program which will meet anticipated water quality standards and growth through about 1995. It is expected that sewage treatment and disposal facilities in the region will be consolidated.

The study will probably recommend that the Pinole-Hercules sewage be treated and exported to either Rodeo or San Pablo for further treatment and deep water disposal. Measures should be taken to reserve rights-of-way and easements when the sub-basin plan is finalized and adopted.

b. Water Reclamation

Water reclamation in Hercules is expected to be potentially attractive only if local reclamation is affected and will be long-term. Reclamation feasibility will, to a large extent, be dependent upon the geographical relationship between the supply and the demand.

The City should develop a reclamation policy and plan which would ensure the full realization of any future potential. The plan should provide for:

- 1) System development
- 2) Right-of-way and easement reservation.

c. Ground Water

Preliminary geologic and soils studies have not indicated any significant ground water resources. It is not believed that there is a body of ground water of sufficient quality to constitute a resource.

3. Hydrology

The City of Hercules is within three major drainage basins, all of which outfall into San Pablo Bay, and are thus subject to tidal influences. Pinole and Rodeo Creeks drain relatively small portions of the City, while Refugio Creek drains the bulk of the City and also a significant basin upstream of the City.

Pinole and Rodeo Creeks are adjacent to the north and south City boundaries and drain the neighboring communities for which they are named. Relatively small portions of the City are drained by these creeks.

a. Pinole Creek

Pinole Creek was recently improved by the Corps of Engineers and is presently operated and maintained by the Contra Costa County Flood Control District. The reach within Hercules is a trapezoidal channel located adjacent to the Hercules Pinole boundary.

In its present state, the Creek is sterile and unattractive but still has potential. The Cities of Pinole and Hercules, in cooperation with the Flood Control District, should develop a riding/hiking plan reinforced with landscaping which will enhance and permit the full utilization of this potential asset.

b. Refugio Creek

Refugio Creek and its tributaries drain the bulk of the City and also a significant basin upstream of the City. The lower Creek is in an inadequate channel with a history of overflowing. The upper channel is on a relatively steep gradient which causes erosion and slumping of side slopes.

The City should develop a master drainage plan which provides for:

- 1) The definition and conservation of existing drainage courses of high aesthetic value.
- 2) The improvement of these channels such that adequate capacity for expected flood flows is provided.

- 3) The maximum utilization of these drainage courses for buffers, open space, pedestrian circulation, recreation, aesthetics, flood control, etc.
- 4) The enhancement of these drainage courses with landscaping, remedial measures and improved public access. The City should also develop ordinances and enforcement mechanisms which will preserve, develop and maintain these drainage courses.

c. Rodeo Creek

Rodeo Creek is located just east of the Hercules City boundary. It is presently being improved per the requirements of the Flood Control District to increase the flood flow capacity of the Creek and provide public access. Provision has been made for increased runoff from Hercules in the design of these improvements.

4. Land Resources

a. Geology and Soils

Preliminary geologic and soils studies indicate the land within the City can be developed for the urban uses contained in the Land Use Element of the Plan¹. However, the presence of surface landslides, expansive soils, steep slopes and compressible valley fills will require detailed soil investigations and inspection during construction.

There are no significant geologic hazards within the City. The Cooper-Clark reports state that this area has been free of earthquake shocks with magnitudes greater than 4.0 during the period 1930 through 1969. The several mapped in the the City are believe to be inactive and their existence has never been confirmed by field explorations.

b. Land Capability for Cultivation

There will be no loss of high quality soils and cropland of significant economic importance.

Most of the City is "not suitable for cultivation" according to the Contra Costa Soil Conservation District². The Refugio Valley floor is Class II, "good land suitable for cultivation. The parcels owned by Signal Oil and Sequoia are Class IV, "fairly good land suitable for cultivation with major limitations." These lands, are, however, all committed to industrial development principally due to their existing use and topography.

The remainder of the City is Class VII, "land not suitable for cultivation but suitable for range and woodland with major limitations."

c. Mineral Resources

There may be a potential for mining needed sands and gravels in the northeastern portion of the property.

Cooper-Clark's report indicated that the unweathered or lightly weathered, hard sandstone, if properly processed, would be suitable as road subbase and possibly base material.

Assuming a sand and gravel operation is feasible, the mining operation would be conducted in conformity to a grading plan which would be compatible with the ultimate land use. Thus, there would be no permanent environmental damage as the result of the utilization of this natural resource.

d. Land Form

Property in the City is characterized by gentle-to-steep grass-covered hills with trees clustered in the water courses and on the hillsides. The higher elevations provide panoramic views of San Pablo Bay.

Topographic relief consists of a series of northwest trending ridges which have a maximum elevation of about six hundred feet, and which decreases in elevation northwesterly toward towlands adjoining San Pablo Bay. Side slopes have been eroded by numerous steep sided gullies emptying into narrow valleys which widen as they drain northwesterly into San Pablo Bay.

The grading concept underlying the Land Use Element of the General Plan includes the grading of ridges and selective filling of valleys allowing existing side slopes to remain in their natural condition. This concept eliminates the need for high graded slopes. Sensitive contour grading and landscaping techniques will provide a transition between developed areas and the open space.

e. Existing Land Use

A relatively small portion of the City is presently developed. Approximately 180 acres are devoted to the following land uses:

- 1) The Sequoia Oil Refinery occupying approximately one hundred acres at the northerly boundary of the City.
- 2) The Hercules Chemical Plant occupying about sixty acres adjoining San Pablo Bay.
- 3) The Hercules company housing areas south of the plant containing approximately eighty dwelling units on twenty acres of land.

- 4) The PG&E electric substation and State of California maintenance yard adjoining Franklin Canyon Road east of the intersection of Highway 80 and State Highway 4.

f. Historical and Archaeological Features

There are no unusual known natural phenomena, historical or archaeological features in the City.

A review with personnel at the University of California, Berkeley, indicates that there are no known significant archaeological or anthropological sites within the City.

g. Utility Rights-of-Way

The property is presently fragmented with limited purpose public and private utility rights-of-way producing an inefficient use of land resources and negative visual impact. These facilities include water, gas and fuel pipelines and overhead electrical facilities. The Circulation Element provides for the relocation of some of these facilities and easements.

5. Vegetation

a. Tree Masses

Significant native (oaks, bays, and buckeyes) and naturalized (eucalyptus) tree masses exist primarily adjacent to the major drainage ways.³

The Land Use Element indicates that the majority of these tree groupings will be within open space areas, parklands, or other public administered land use zones. Grading operations, utility placement, and drainage course alterations will require comprehensive planning and supervision to avoid permanent damage to existing tree masses.

Areas west of Highway 80 and some in Refugio Valley designated to become low density residential will require special design considerations in order to preserve significant quantities of the existing Eucalyptus trees.

b. Specimen Trees

A few specimen quality trees exist outside the basic tree masses. These specimen oaks and Eucalyptus have been indicated in the Plant Material Study and detailed grading and drainage design in their areas will be necessary to ensure their preservation.

c. Exotic Trees

A concentrated planting of exotic trees exists in the present residential area adjacent to the chemical plant. The Land Use Element of the plan indicated this area will be preserved as a major waterfront park for the City.

d. Grasslands

Large areas of the City are undeveloped grasslands currently used for sheep and cattle grazing. The proposals presented in the Plant Material Study will establish additional forested slopes of native trees between developed areas and leave some of the high elevation areas of the open space system in grasslands. This will conserve a minor portion of the grassland character while providing a more desirable environment adjacent to the developed areas.

e. Wildlife

The diversity of habitat types in the area provides for the maintenance of a wide variety of animal species. The wide expanses of grasslands periodically broken up by shrubby and arboreal forms, provide excellent habitat for such species as hawks, eagles and vultures. These birds cruise over wide areas of grassland in search of pocket gophers, harvest mice and miscellaneous small birds and reptiles which inhabit the area.

Along the streamsides and in the Eucalyptus groves, warblers, juncos, thrushes, and chestnut-backed chickadees were observed. For the most part, Eucalyptus is of little wildlife value; however, the groves do provide cover and roosting for several species of perching birds. These riparian areas are important to many species of amphibians and reptiles and several carnivores such as the longtail weasels and spotted skunks.

The oak woodland habitat type provides food and cover for black-tailed deer, gray squirrels and other rodents, California valley quail, and numerous other avian species. Although oaks provide little wildlife cover, per se, their value is highest when combined with other habitats and vegetative forms such as coyote brush, California laurel and other species.

Some of the oak woodland is also associated with a source of water, and thus provides all the major components for optimum wildlife habitat - food, cover and water.

Most wildlife species found in the chaparral habitat type frequent other habitats throughout the area, as the presence of just one vegetative form such as coyote brush is of little value to wildlife.

Where the chaparral is interspersed with oak woodland, grassland and other habitats, wildlife such as blacktailed deer and California quail is abundant.

According to the California Department of Fish and Game "California Fish and Wildlife Plan," blacktailed deer densities range from 10 to 30 per square mile in Contra Costa County woodland-grass and chaparral types. Deer densities in this study area are within this range, as 15 were observed during field studies. Estimates for California quail in Contra Costa County range from 10 to 50 birds per 100 acres. Other population estimates for game species found in the study area include mourning doves, 10 to 100 per 100 acres in woodland-grass; and band-tailed pigeons (winter migrants) occurring in densities from 10 to 100 per 100 acres.

The saltmarsh habitat provides food, escape cover and nesting cover for such wildlife species such as marsh hawks, various species of gulls, short-eared owls, warblers, marsh wrens, and numerous species of sparrows. Because there is little suitable upland habitat, mammals and reptiles are limited. Associated with the saltmarsh are expanses of mudflats bordering San Pablo Bay. These mudflats are utilized extensively by shore birds and wading birds during the ebb and flood cycles of the tides. The large number of invertebrate organisms beneath the mud surface and small fish in the surface waters provide a valuable source of food for the hundreds of shore birds⁴.

C. THE OPEN SPACE/CONSERVATION PLAN

1. Objectives

The basic objective of the Open Space and Conservation Element is to provide for both human and environmental needs in creating a natural environment compatible with urban development by the wise use and enhancement of natural resources within the City. Subgoals of this basic objective are to:

- a. Develop a plan for the preservation of open space within the community.
- b. Establish a management program for the conservation and enhancement of the natural amenities in the City.
- c. Incorporate conservation areas such as drainage courses, areas of natural vegetation and baylands into the open space system.
- d. Provide for the linkage of public and private open spaces throughout the community.

2. Standards

The open space resources in the 1990 General Plan will include the following:

- Public open spaces (951.4 acres)
- City parks (63.2 acres)
- Schools (84.6 acres)
- Civic Center (15 acres)
- Transportation rights-of-way (314 acres)
- Baylands (8,140 acres)

In addition, there will be private open space and recreation areas within residential neighborhoods. The most effective open space will be the public open space and developed city parks which will amount to a total of 1,022.6 acres. This is about 32% of the developable land in the City and amounts to 14.6 acres per 100 housing units. However, this open space will not be uniformly distributed throughout the community as demonstrated in Table 14.

The proximity and availability of open space and conservation lands is of particular concern in neighborhood design. These lands help to define the shape and character of the landscape providing views and vistas and usable open space on a daily basis. A number of factors will be considered in the establishment of urban design standards in adopting the neighborhood plans for specific areas including:

- a. The relationship to city parks and public open space within the City.
- b. The proximity to the Bay or permanent open spaces outside the City.
- c. The expected composition of the population (proportion of children or senior citizens).
- d. The type and configuration of housing units.
- e. Vehicular and pedestrian circulation.
- f. The amount, distribution and quality of proposed private open spaces and recreation areas.

The amount of lands designated in the General Plan for permanent open space and parks represents a high standard for California cities - about 47 acres per 1,000 population. The quality of the natural environment will depend to a large degree on the urban design standards built into Neighborhood Plans and the adequacy of City open space management programs.

Table 14
Summary of Public Open Space/Parks by Study Area

| Study Area | Description | Parks & Open Space (Acres) | Developable Area (Acres)* | % of Developable Area in Open Space | Housing Units | Acres of Parks & Open Space/100 HU |
|------------|--------------------------|----------------------------|---------------------------|-------------------------------------|---------------|------------------------------------|
| 1 | Residential | 170.0 | 559.0 | 30% | 1,497 | 11.3 |
| 2 | Town Center | 4.0 | 65.0 | 6% | 0 | 0.0 |
| 3 & 4 | Residential | 311.0 | 703.8 | 45% | 1,539 | 20.2 |
| 5 | Residential | 12.0 | 100.0 | 12% | 1,160 | 1.0 |
| 6 | Residential | 39.1 | 234.2 | 17% | 736 | 5.3 |
| 7 | Industrial | 13.0 | 634.8 | 2% | 0 | 0.0 |
| 8 | Residential | 29.6 | 129.0 | 23% | 714 | 4.1 |
| 9 | Multi-purpose | 0.0 | 51.1 | 0% | 215 | 0.0 |
| 10 | Residential | 375.0 | 589.0 | 64% | 1,100 | 34.0 |
| 11 | Residential | 60.9 | 124.0 | 49% | 135 | 45.1 |
| | SUBTOTAL | 1014.6 | 3189.9 | 32% | 6,965 | 14.6 |
| 12 | Sphere of Influence Area | | 627.0 | | | |
| 13 | Sphere of Influence Area | | 306.0 | | | |
| 14 | Sphere of Influence Area | | 431.0 | | | |
| | TOTAL | | 4553.9 | | 6,965 | |

* Developable acres excludes lands devoted to freeways, arterials, railroads and the baylands.

3. Open Space and Conservation Proposals

The Open Space and Conservation Element provides for the comprehensive and long-range conservation, and enhancement of the environmental resources within the City. Figures 14 and 15 show the distribution of the following types of open space:

- Public open spaces
- City parks
- School athletic fields
- Landscaped rights-of-way
- Baylands

The trail system provides linkage of these various open spaces, making it possible to circulate by foot or bicycle through the community with minimal conflict with automobile traffic. Also, the plant materials program outlined under 'Implementation' is an integral part of the following open space proposals.

a. Public Open Spaces

The public open spaces represent the largest share and most effective opportunity for conservation and open space within the City. The General Plan has been designed to preserve most of the existing high quality vegetation, wildlife habitat and land forms within the public open spaces and conservation areas.

Public open spaces are classified into the following areas: riparian, chaparral, oak groves, salt marsh and greenways.

1) Riparian Areas

The major riparian system is Refugio Creek from the easterly city limits to the Bay. Most of the creek east of I-80 will be maintained in a natural condition. The wildlife habitat will be enhanced by planting appropriate vegetation. Small ponds designed to reduce the velocity of water and possible erosion will also encourage wildlife in the riparian areas.

West of I-80, the existing low flow channel will be realigned to the south in a multi-use open space corridor. In addition to the drainage facility, the corridor will include the trunk sewer, overhead power transmission lines and trails. The drainage facility will be designed and landscaped so as to have a natural appearance and enhance wildlife habitat. Some of the draws have springs which can be developed with watering holes and planting to support small animals.

OPEN SPACE & CONSERVATION PLAN

LEGEND

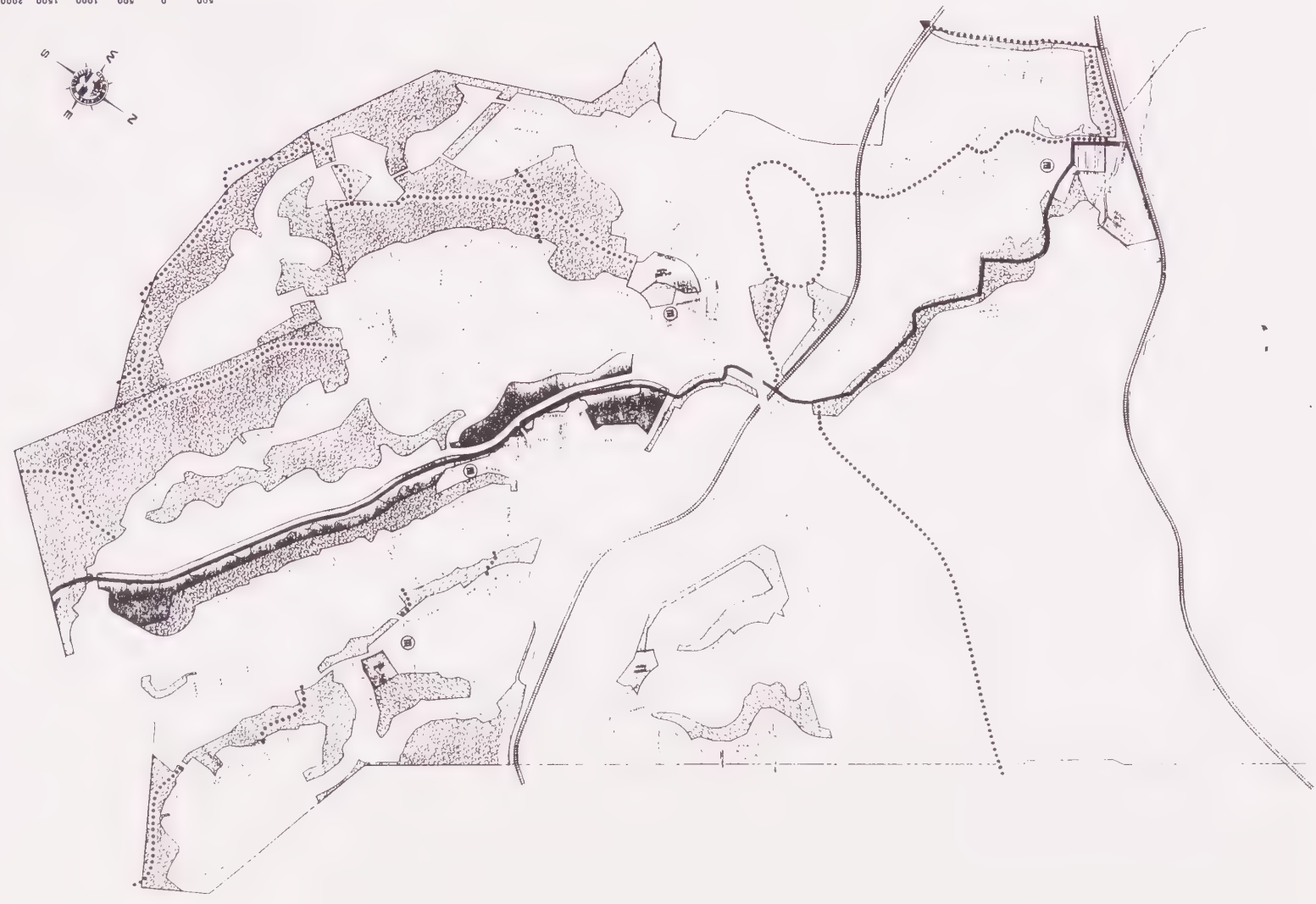
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|  | REGIONAL RIDING TRAILS |
|  | LOCAL TRAILS |
|  | PARKS |
|  | SCHOOL ATHLETIC FIELDS |
|  | PUBLIC OPEN SPACE |
|  | BAY LANDS |

GENERAL PLAN

CITY OF HERCULES,
CALIFORNIA

Prepared by KCA ENGINEERS San Francisco

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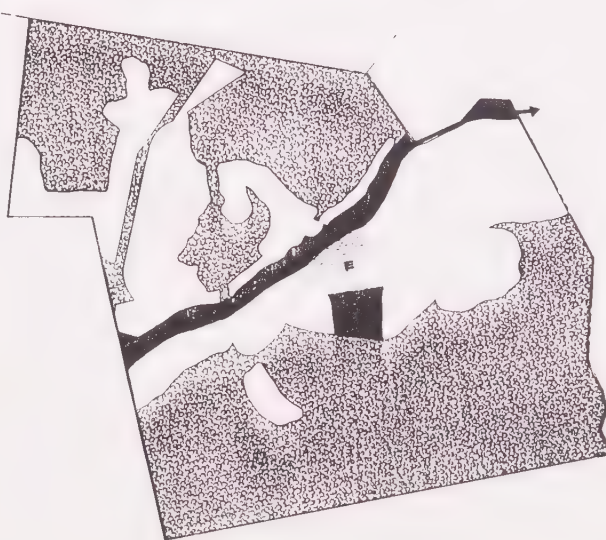
OPEN SPACE & CONSERVATION PLAN

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|  | PUBLIC OPEN SPACE |
|  | BAY LANDS |

GENERAL PLAN

CITY OF HERCULES,
CALIFORNIA



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Prepared by KCA ENGINEERS San Francisco

2) Chaparral

The extensive side hill in the southeast portion of the City has large areas of dense coyote brush interspersed with live oaks and buckeye providing good habitat for deer and other wildlife. This area should be left in its natural state except for trails, outlooks and other limited recreational improvements.

3) Oak Groves

The oak groves in canyon bottoms and side hills will be preserved in their natural state where possible. Special care should be taken in construction operations to minimize damage to this valuable natural resource.

4) Salt Marsh

The small marshland westerly of the Southern Pacific Railroad, adjacent to the waterfront park, should be preserved in its natural state. The only improvement to this area would be an elevated walkway for observation of shorebirds and other wildlife.

5) Greenways

These areas are mostly grass covered hilltops and slopes interspersed with residential areas in the easterly portion of the City. As much as practical of this grassland within the public open spaces should be preserved in its natural state because of its value as habitat for many species of raptors.

b. City Parks

City parks are classified in the Recreation Element as:

- Neighborhood parks
- Waterfront park
- Community park
- Picnic grounds, and
- Bicycle and hiking trails

1) Neighborhood Parks

The five-acre neighborhood parks adjoining elementary schools will include pre-school tot lots, multi-use fields, baseball diamonds, rest rooms and storage buildings.

2) Waterfront Park

The waterfront park facilities will include multi-use fields, picnic areas and parking. Much of the park will be maintained in a natural condition reserved for passive recreation.

3) Community Park

A twelve-acre community park is located in Refugio Valley and will contain a lake, amphitheater, multi-use field, picnic areas and parking.

4) Picnic Grounds

Picnic tables, benches and barbecue facilities will be located in scenic locations in the public open spaces and parks.

5) Bicycle and Hiking Trails

A connecting system of bicycle and hiking trails will connect open spaces and activity areas in the community and link with regional trails in Refugio Canyon. The trail system will be separated from streets and highways where practical.

The types of trails shown in the open space/conservation plan (Figures 14 and 15) include:

- Regional riding trails
- Regional hiking trails, and
- Local trails

The regional riding trail shown in Figures 14 and 15 would connect with the riding trail shown in the County Riding Trails Plan. This trail would penetrate the City at the easterly extremity of Refugio Canyon, but would not continue through the City. The regional hiking trail in Figure 16 corresponds to the proposed County Hiking Trail Plan and would follow Refugio Creek and the multi-use open space corridor to the waterfront park. It is proposed that, if feasible, this trail might continue southward to Pinole Creek looping back and connecting with the County trail in Pinole Creek. A local trail is shown along San Pablo Avenue which corresponds to the route shown on the County Bicycle Path Plan. Other local paths shown on Figures 14 and 15 may be either hiking trails, bicycle paths or both.

The East Bay Regional Park District has published a Preliminary Regional Trails Plan which shows a bicycle/hiking trail across the City's entire bayfront. There are some serious constraints to an alignment along the shoreline in the City, including:

- a) The physical feasibility of a trail.
- b) Negotiations with Southern Pacific Railroad regarding use of rights-of way.
- c) Protection of the public from hazards.

Therefore, this alignment is not now shown on the proposed Open Space and Conservation Plan; however, the City will work with the District to find a feasible route as close to the waterfront as possible.

c. School Athletic Fields

The Recreation Element provides that athletic facilities on the elementary and high school sites should be integrated into the recreational program for the community. Elementary school athletic courts and fields would adjoin City parks permitting joint use of facilities. The trail system connects school yards with public open spaces and residential areas.

d. Landscaped Rights-of-Way

Almost 314 acres are devoted to freeways, arterial streets and railroads. Other rights-of-way include overhead power transmission lines and underground pipelines. The City should integrate these public and semi-public rights-of-way into the open space system as trails and/or visual open space.

e. Baylands

There are no proposals in the General Plan for development of the baylands with the minor exception of an elevated walkway over the salt marsh. The Recreation Element recognizes the recreational value of the baylands and indicates that potentials be explored with the several agencies having jurisdiction or interest in the future use of this natural resource.

Access to the Bay is severely limited in the City because of the existence of the Southern Pacific Railroad right on the shoreline. Public access to the Bay will be through the waterfront park, a twenty-acre community-type facility. An overhead crossing of the railroad tracks and a boardwalk through the salt marsh are proposed to provide convenient and safe public access to the water.

f. Private Open Space

Cluster housing neighborhoods and apartment complexes will have internal recreation areas and greenways which add to open space in the community. These areas will be integrated into the Open Space/Conservation Plan in terms of linkage and landscape design. Preservation of valuable vegetation will be an integral part of urban design considerations in site planning for new residential development.

D. IMPLEMENTATION

The implementation tools available for the open space/conservation element are in three major areas:

- Municipal programs requiring city funds,
- Community development requirements for private development, and
- Coordination with other agencies.

1. Municipal Programs

a. Open Space Management Program

The basis for a coordinated open space management program for plant materials and wildlife is contained in two reports prepared for the City¹. A comprehensive program should include the following:

- 1) Operation of an on-site nursery/tree farm,
- 2) Planting open space areas prior to development,
- 3) Developing a uniform street tree program, and
- 4) Encouraging the maintenance of wildlife populations by providing a diversity of habitats.

b. Resource Management Program

The following plans, related to water quality, hydrology and land resources should be considered in conjunction with the open space/conservation element:

- 1) A wastewater management plan
- 2) A master drainage plan
- 3) A mineral resources development plan
- 4) A program for environmental evaluation of major public service facilities and rights-of-way.

c. Capital Improvements Program

The capital improvements program is a five year program for municipal capital expenditures which enable the City to plan finances for more than one year at a time. The priorities of open space and conservation needs will be evaluated and ranked against other community needs in the Capital Improvements Program.

Each year the City must allocate funds required for the operation, maintenance and capital expenditures in connection with the open space/conservation element. It is essential that open space/conservation programs are realistically planned in terms of other priorities in the community and the City's financial resources.

2. Community Development Requirements

Consideration of open space and conservation goals will be an integral part of the community planning and design process.

a. General Plan and Zoning Proposals

All General Plan and zoning proposals will be reviewed in terms of the goals and proposals established in this element. Those areas where there is a potential effect on open space and conservation will receive special attention in subsequent planning and design reviews.

b. Neighborhood Plans

Proposed neighborhood plans will be reviewed in terms of opportunities for conserving and enhancing the natural environment and creating development that is compatible with the open space system.

c. Tentative Maps and Planned Unit Developments

Tentative maps and PUD's will incorporate urban design techniques to take advantage of the existing environmental qualities of sites being developed within the City.

d. Subdivision and Grading Ordinances

The City's proposed subdivision and grading ordinances contain specific provisions establishing minimum standards for the development of land in the City. These regulations, effectively administered, can minimize temporary or permanent environmental damage due to land development to insure that development is compatible with the open space/conservation goals.

The grading ordinance will assist in implementing the goals of this element by specifically requiring:

- 1) Stockpiling and replacement of the soil mantle.
- 2) The reestablishment of vegetative cover.
- 3) Slopes to be blended, to the extent practical, into the existing terrain.
- 4) A thorough soils investigation of all grading and development proposals, and continuous supervision of all grading operations.
- 5) Installation of adequate temporary and permanent drainage provisions.

3. Coordination With Other Agencies

The City should work with the City of Pinole and Contra Costa County in coordinating plans for open space and conservation. The City should also explore opportunities for State and Federal funds which may be applied to open space purposes.

The City should work with the school district toward joint use of recreational facilities provided in municipal parks and on school property. To this end, the Hercules General Plan shows proposed elementary school sites adjoining city parks. The joint planning construction and operation of these facilities can increase the total amount of open space lands available to future residents for recreational purposes.

The City might also coordinate with the school district regarding landscaping and maintenance of their sites.

The City should consult with the several public and semi-public agencies who have rights-of-way within the City. With proper planning, these lands can be a resource for providing future landscaped open space. Conversely, poorly maintained rights-of-way can be an environmental negative in a community. Some of the trails shown on the open space/conservation plan are within various rights-of-way.

SEISMIC SAFETY/SAFETY ELEMENT
OF THE GENERAL PLAN

VI.

APPROVED BY THE CITY COUNCIL
OCTOBER, 1990

VI. THE SEISMIC SAFETY/SAFETY ELEMENT

A. AUTHORITY

1. Seismic Safety

Government Code Section 65302(f) requires a seismic safety element of all city and county general plans, as follows:

"A seismic safety element consisting of an identification and appraisal of seismic hazards such as susceptibility to surface ruptures from faulting, to groundshaking, to ground failures, or to the effects of seismically induced waves such as tsunamis and seiches.

The seismic safety element shall also include an appraisal of mudslides, landslides, and slope stability as necessary geological hazards that must be considered simultaneously with other hazards such as possible surface ruptures from faulting, ground shaking, ground failure and seismically induced waves."

The effect of this section is to require cities and counties to take seismic hazards into account in their planning programs. All seismic hazards need to be considered even though only ground and water effects are given as specific examples. The basic objective is to reduce loss of life, injuries, damage to property, and economic and social dislocations resulting from future earthquakes.

2. Safety

Government Code Section 65302.1 requires a safety element of all city and county general plans, as follows:

"A safety element for the protection of the community from fires and geologic hazards including features necessary for such protection and excavation routes, peak load water supply requirements, minimum road widths, clearances around structures, and geologic hazard mapping in areas of known geologic hazard."

B. RESEARCH AND ANALYSIS

1. Geologic Mapping

A detailed geologic field reconnaissance was conducted by Cooper-Clark and Associates for the City as part of their geologic and soils investigations in 1971. Additional studies have been done for each neighborhood as they develop showing the following types of information:

- a. Geologic formations
- b. Topographic features
- c. Evidence of landslides

- d. Areas of deeper soils
- e. Rock outcrops
- f. Dip and strike of bedding
- g. Geologic contact
- h. Evidence of fault traces
- i. Springs or seepage areas

2. Seismic Hazards

On the basis of past history, all of the San Francisco Bay Area is considered seismically. There is no method by which the location, magnitude or time of future seismic occurrences can be predicted. However, it is possible to identify certain types of seismic hazards and foretell which areas of the City will be particularly subject to damage by earthquakes. The following discussions summarizes the potential damaging effects of earthquakes in the City including ground shaking, ground failure, surface ruptures and tsunamis.

a. Ground Shaking

The City is about two and a half miles northeast of the Haywire Fault Zone and about 21 miles northeast of the San Andreas Fault Zone. Both of these faults are active and have been the source of numerous earthquakes.

The northwest projection of another active fault, the Calaveras Fault, passes through the Carquinez Straight, near Crockett, approximately four miles northeast of this site.

Recorded earthquake epicenters within a radius of 10 miles of the City during the period from 1930 through 1969 indicate that the City has been free of seismic shocks of the magnitude over 4.0. While it is impossible to predict when a major earthquake will occur, it must be assumed that such earthquakes will occur within the life of any new structures constructed within the City.

The intensity of ground vibrations during earthquakes decreases in a general way with distances from the epicenter and source fault. However, within about 30 to 30 miles of the source, the intensity of ground vibration is more related to the physical characteristics of the foundation materials than to distance from the fault. Rock is generally considered to be the best type of foundation material, followed by weathered rock, compacted fill and alluvium. Loose, sidehill artificial fill constitutes the most hazardous foundation material under seismic conditions. A high ground water level in soft or loose soil accentuates ground vibrations and increases damage hazards.

Most of the site provides excellent foundation conditions from the standpoint of seismic hazards. Foundation conditions in the lower valleys are not as good as in the areas where rock is exposed. However, the lower valleys provide better foundation conditions than do the many thousands of acres of reclaimed tideland industrial and residential developments which surround the San Francisco Bay.

b. Ground Failure

Ground failure may be a damaging effect of earthquakes in the form of land slides, rock falls, subsidence and other surface and near surface ground movements.

The possibility of earthquake-induced landslides should be anticipated within the City, particularly upon the steeper slopes where slide activity has already occurred. The amount of sliding would be intensified if a seismic shock occurred during wet winter months when the slopes were in a saturated, weakened condition.

Liquefaction and boils occur in loose, sandy soils with a shallow water table. Where these conditions exist, earthquakes may cause heavy, shallow-founded buildings to settle and buried tanks to rise.

Loose soils deposits may densify during earthquakes and result in subsidence of the ground surface and damage to shallow-founded buildings, streets and buried utilities.

c. Surface Ruptures

The California State Legislature declared, in the Geologic Hazard Zones Act, that the State Geologist and the State Mining and Geology Board has established policies and criteria for hazards resulting from surface faulting of fault creep.

Maps delineating "special study zones" have been compiled and distributed to State and local agencies. Geologic reports are to be prepared and filed with the State Geologies for structures intended for human occupancy proposed to be constructed within a designated special study zone. The Geologic Hazard Zones Act regards faults which have had surface displacement within Holocene time (about the last 11,000 years) as active and, hence, as constituting a potential hazard requiring special study.

The preliminary maps submitted by the Division of Mining and Geology for the City's consideration in December 1973, showed two study zones within the City:

- 1) The East and West Pinole Fault Traces
- 2) Pinole Ridge

The 1971 Cooper and Clark Geologic and Preliminary Soil Investigation mapped and approximate location of Pinole Faults which are concealed due to the presence of overlying valley alluvium. In 1974, Cooper and Clark investigated the study zone on Pinole Ridge and recommended that the fault should be removed from the Special Studies Zones Maps. Thus, the Official Maps of Special Studies Zones, dated July 1, 1974, show no "Special Studies Zones" within the City of Hercules (see Figure 18). Although there are no faults within the City which meet the Division of Mining and Geology definition for an active fault, further in-depth studies in the vicinity of the Pinole Traces and on Pinole Ridge should be conducted prior to precise planning for development within these areas.

d. Tsunamis

Tsunamis are another potentially damaging effect of earthquakes in coastal areas. These are seismic sea waves, often called "tidal waves".

There is no evidence that any portion of Contra Costa County that is exposed to Tsunami inundation has experienced significant damage from that cause. The likelihood of damage within the City of Hercules is quite small.

The maximum run-up recorded at the Golden Gate during the period 1869 to 1968 was 7.4 feet. The attenuation expressed as a percentage of the eight at the Golden Gate might be 50% at Richmond and 90% in the vicinity of Hercules.

Based on historical observations, the Contra Costa Planning staff estimates a seismic sea wave having a 20-foot run-up at the Golden Gate can be expected to enter the Bay once every 200 years.

3. Geological Hazards

Potential geological hazards in the City include:

- a. Landslides and soil creep
- b. Valley Alluvium
- c. Existing fills
- d. Ground water, seepage and ponding
- e. Erosion

The City has recently adopted a Grading Ordinance establishing standards for grading operations, requiring the issuance of grading

permits, providing for the approval of grading plans, and inspection of grading construction. The Grading Ordinance provides for testing where there are potential geologic hazards.

a. Landslides and Soil Creep

Numerous shallow landslides of various sizes are present, particularly in the southeastern part of the City.

In addition to the landslides, soil creep movements are occurring on certain slopes within the City. Creep movement is generally most active and widespread on the steeper slopes. Rates and depths of creep movement are much slower and shallower than those associated with active landsliding.

b. Valley Alluvium

The depth of alluvium in Refugio Valley varies from 11.5 feet in the southeast portion of the valley to about 80 feet near the valley mouth. Most of the upper valley is blanketed with an expansive, adobe-type soil. the adobe-like topsoil is generally underlain to the bedrock formation with firm to still alluvial soils. However, in some locations, compressible fresh water marsh deposits are present, which become thicker and closer to the ground surface in the lower portions of Refugio Valley. Near the mouth of Refugio Valley, in the vicinity of Hercules Incorporated plant, very weak and compressible younger bay muds are present. The depth of the younger bay muds near the valley mouth ranges from about 45 feet to about 70 feet. Older bay muds and/or residential soils of variable depths underlie the younger bay muds.

c. Existing Fills

Overlying the valley alluvium and some overburden soil deposits are several generally small and shallow embankment fills. Most of these fills are in Refugio Valley and vary in depth from the few feet up to ten feet. One large fill, just southeast of the plant to Refugio Valley, consists of approximately 100,000 cubic yards and averages about four feet in depth.

d. Ground Water, Seepage and Ponding

A generally shallow, thin zone of ground water will be encountered in most of Refugio Valley at depths ranging between three and five feet. Somewhat deeper ground water levels exist in the upper portions of the valley. Similar shallow ground water levels are expected adjacent to Pinole and Rodeo Creeks.

Several small springs and areas of surface seepage are present in the City, usually located in the Foot or toe areas of landslides or at the base of sharp breaks in slope. During the wet winter months, numerous, generally small areas of water pond throughout the confines of Refugio Valley. Most ponds were caused by site grading for plant facilities over the years.

e. Erosion

Unprotected soils and highly weathered bedrock will be subject to erosion. Protective measures are especially needed for the Montezuma Formation (Q mz) which is generally highly erodable.

4. Existing Fire Hazards

Fire hazard areas within the City include:

- a. The village residential area
- b. Industrial uses
- c. Open space

The village contains 26 wood frame homes which were built in the last one hundred years.

Historically, the two major industrial plants in the City (the Hercules Chemical Plant and the Pacific Refinery) provide their own private fire fighting facilities within the plant sites.

The open spaces include brush and grass covered hills, and forested areas. The blue gum Eucalyptus is particularly flammable. At the present time, much of this area is behind fences and not available to the general public. As the City grows and develops, the potential for fires within the open spaces will undoubtedly increase.

5. Future Fire Service

A temporary fire station was constructed in 1983 at the Civic Center site in Neighborhood 2. A new permanent station is planned to be built on the southwest corner of the intersection of Refugio Valley Road and Partridge. Design and construction of this station is planned for July 1989 - July 1990, with operation of the station to begin about August 1990. When the permanent station is operational, the temporary Civic Center station will be dismantled and removed from that site.

7. Land Use and Circulation

The Land Use and Circulation Elements were reviewed in terms of safety considerations. The Circulation Plan provides a framework

of arterials and local streets that will provide alternate routes to or from any portion of the City in case of emergency. Long cul-de-sacs present safety problems because of the possibility of blockage preventing access of emergency equipment or evacuation of residents. The matter will be solved prior to approval of development plans.

The blockage of Interstate 80 within the City would have a major impact on the circulation system. The only alternate route for traffic would be San Pablo Avenue. Willow Avenue would be the alternate route in the case of a blockage on Route 4.

8. Flood Hazards

Potential causes of flooding in the City include:

- High tides and storm waves
- Creek overflows
- Standing water from excess rainfall

a. High Tides and Storm Waves

The City's northwest land area is adjacent to San Pablo Bay. Pinole Creek, between San Pablo Avenue and the Bay is a tidal waterway which has been improved and realigned by the Corps of Engineers. A large portion of Refugio Creek has not been improved, thus remaining susceptible to flooding. High tides and storm-driven waves occurring together could overtop embankments and flood low-lying coastal areas.

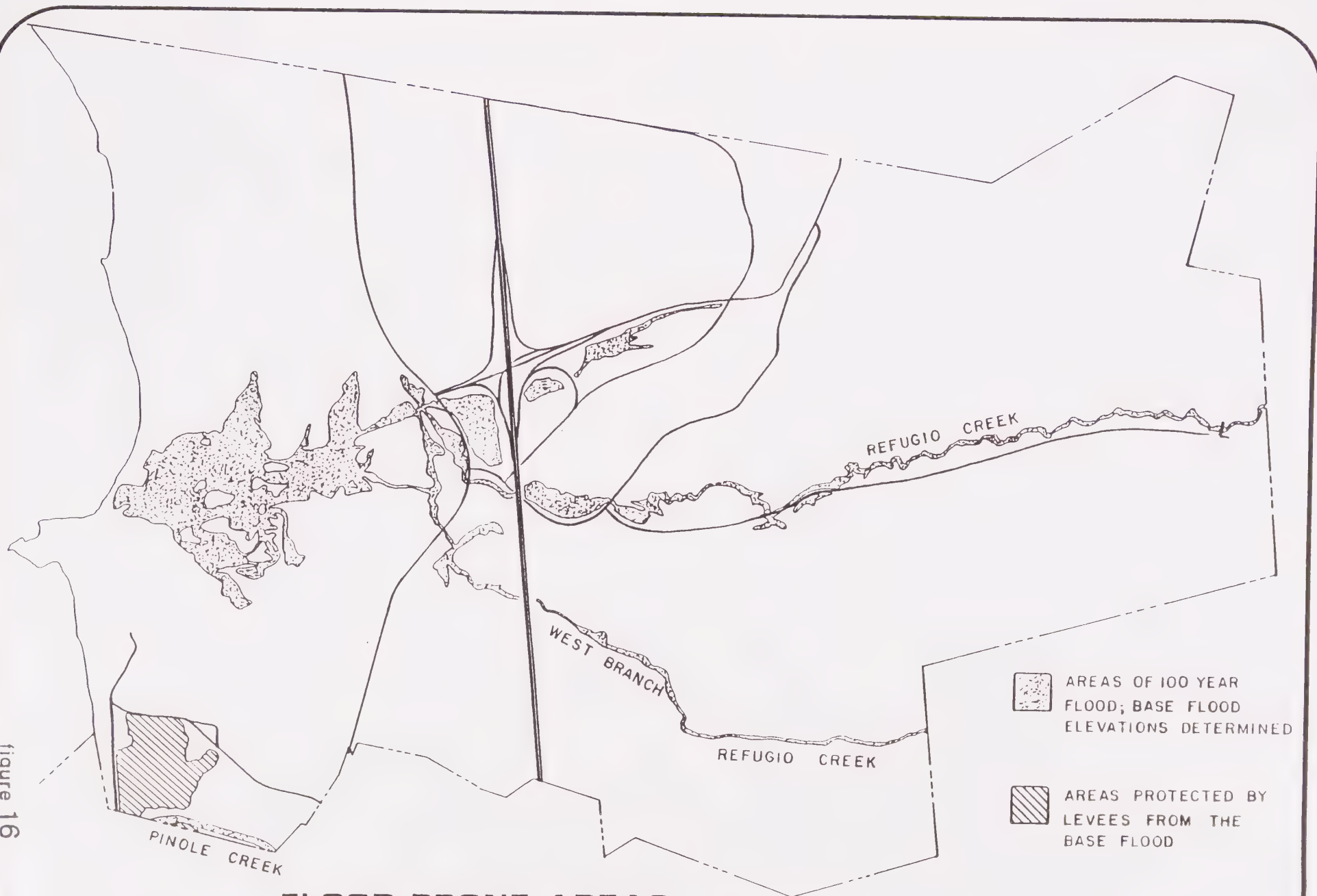
b. Creek Overflows

When the surface runoff exceeds the capacity of the creek channel to carry the flow, creek overflows result. Pinole and Rodeo Creeks drain relatively small portions of the City while the drainage basin of Refugio Creek covers most of the City and extends well beyond the City boundary to the east. Pinole and Rodeo Creeks are adjacent to the northern and southern City boundaries and drain the neighboring communities for which they are named.



Pinole Creek was improved by the Corps of Engineers and is presently operated and maintained by the Contra Costa County Flood Control District. Rodeo Creek is presently being improved per the requirements of the Flood Control District to increase the flood flow capacity of the Creek.

The lower channel of Refugio Creek is inadequate with a history of overflowing. The upper channel is on a slumping of slide slopes. Areas of 100-year flooding can be seen in Figure 16. For specific elevations of flooding, please see the Flood Insurance

figure 16



FLOOD PRONE AREAS

-  AREAS OF 100 YEAR FLOOD; BASE FLOOD ELEVATIONS DETERMINED
-  AREAS PROTECTED BY LEVEES FROM THE BASE FLOOD

Rate map (Community Panel Number 060434 0008 B) on file with the City of Hercules.

c. Standing Water from Excess Rainfall

Standing water from excess rainfall could occur in low-lying and level areas if the natural drainage channels were interrupted or modified by grading or impervious soils prevented the rapid infiltration of rainfall into the ground. Protection and improvement of drainage channels should be provided.

c. POLICIES AND PROPOSALS

1. Safety/Seismic Safety Objectives

The basis objective of the Safety/Seismic Safety Element is to reduce loss of life, injuries, damage to property and economic and social dislocations resulting from future seismic, geological and fire hazards. Subgoals of this basis objective are to:

- a. Identify Hazards
- b. Establish adequate design and safety standards to reduce risks
- c. Incorporate safety considerations into the planning process

2. Policies

a. General

Neighborhood plans must consider potential seismic, geologic and fire hazards and introduce adequate safety measures in development plans and proposals.

b. Seismic Safety Policy

Further investigations of possible fault traces should be made in the vicinity of the Pinole Traces and Pinole Ridge. Setbacks from located traces should be based on geological engineering recommendations.

c. Geologic Safety Policy

The administration of subdivision and grading ordinances should allow for flexibility in the review and approval of construction plans to permit sound engineering design in the solution of specific geological problems. Some specific policies bases on the Geologic and Preliminary Soils Report by Cooper-Clark and Associates include:

- 1) Improperly compacted existing fills and backfills should be excavated from areas to be filled.
- 2) All areas to be graded should be stripped of vegetation and the top few inches of highly organic topsoil.
- 3) Organic topsoil should be stripped and stockpiled and used for landscaping.
- 4) Lower valley areas where bay mud deposits are exposed or are blanketed by shallow thickness's of poorly compacted fill will require detailed studies prior to site grading.
- 5) Sidehill "sliver" cuts and fills should be avoided.
- 6) Special consideration should be given to slope stability in the steep hillside areas.
- 7) Steep sideslopes should be left in their natural condition where possible.
- 8) Setbacks should be determined based on detailed soils investigations in individual cases opposite landslide prone slopes to reduce the potential for slide damage to improvements.
- 9) Expansive soils should be considered in the design of road pavement sections.
- 10) Site planning should consider the potential of differential settlement where compressible soils exist.
- 11) Areas underlain by soft bay mud will require further detailed soils investigations.
- 12) Slopes should be planted as soon as possible after completion of construction to develop a protective organic mat.
- 13) Dense pockets of brush and trees located on steep slopes should be left intact where possible to prevent potential landsliding.
- 14) The sides of the stream channel in portions of Refugio Valley should be improved to protect erosion - induced slumping. Care should be taken to maintain the natural appearance of the water-course in the open space areas.

d. Fire Safety Policy

- 1) The City should continually evaluate the alternatives for providing adequate fire service to meet the changing needs of the City in the most efficient manner.
- 2) A fire station site should be reserved in a central location within the City.
- 3) Neighborhood plans should include measures to promote fire safety including:
 - aa) Road circulation for fire access.
 - bb) Access to structures and open spaces
 - cc) Fire flow needs
 - dd) Landscape design
- 4) Open spaces should be planned to provide:
 - aa) A buffer of irrigated landscaping and/or plowed area maintained between open spaces and developed areas.
 - bb) Fire access trails in major open spaces to allow fire equipment to penetrate. These trails could be part of the City-wide system of trails.
 - cc) The use of fire resistant plant materials in open space landscaping.
 - dd) Containment of potential fires where natural vegetation exists in open spaces.
- 5) Responsibilities for maintenance of fire trails, cleaning vegetated areas and maintaining fire breaks should be clearly defined in approving specific plans.

e. Flooding Safety Policy

- 1) Refugio Creek Channel should be improved for existing drainage so that adequate capacity for expected flood flows is provided.
- 2) The City should develop ordinances and enforcement mechanisms which preserve, develop and maintain drainage courses.

- 3) Review of any significant project proposals for areas which are not presently in flood zones should include an evaluation of increased downstream flows resulting from the project.
- 4) Finished floor elevation of all developments must be one foot above the 100 year flood elevations prescribed on the Flood Insurance Rate Map.
- 5) In order to protect lives and property, intensive development should not be permitted in reclaimed areas unless flood protection in such areas is constructed to the standards of the Flood Disaster Protection Act of 1973.

D. IMPLEMENTATION

1. Other Elements

Seismic, geologic and fire safety policies will be integrated into other mandatory elements of the General Plan.

2. Community Development Regulations

Administration and enforcement of municipal regulations provide positive measures for implementing safety policies.

a. Planning Review

Specific plans must be prepared and adopted for each neighborhood in the City prior to approval of development plans. Safety measures will be incorporated into these specific plans to provide adequate protection from seismic, geologic and fire hazards.

The review and approval of zoning applications, tentative maps and planned unit developments will include consideration of safety policies and standards contained in the General Plan, neighborhood plans or other specific plans.

b. Subdivision and Grading Regulations

The subdivision and grading regulations govern the subdivision of land, and designing and construction of site improvements. Seismic, geologic and fire hazards will be considered in review and approval of tract maps, grading and improvement plans.

c. Building and Fire Codes

The City Council has adopted the Uniform Building Code and the Uniform Fire Code (1973 Editions). Fire zones have also been designated in the City.

- 1) The Uniform Building Code provides minimum safety standards by regulating the design, construction, materials use and occupancy of buildings and structures within the City.
- 2) The Fire Code governs the maintenance of buildings by regulating the storage and handling of dangerous materials and by requiring adequate egress facilities.
- 3) Fire Zones limit the potential fire size, thereby preventing major conflagrations. All commercially zoned land in the City is designated Fire Zone 2 and the remainder is in Fire Zone 3. Fire Zone restrictions involve building construction and the division of large building areas by fire walls.

d. An Emergency Operations Plan should be prepared and maintained to provide responsibilities and procedures in the event of a major disaster or emergency in the City. This plan should be compatible with the State of California and the Office of Emergency Services.

e. The Capital Improvements Program is a five-year program for municipal capital expenditures. Capital improvements which promote safety in the City, such as a fire station, will be evaluated and ranked with the other needs in the community.

NOISE ELEMENT
OF THE GENERAL PLAN

APPROVED BY THE CITY COUNCIL
OCTOBER 5, 1988

VII. THE NOISE ELEMENT

A. AUTHORITY

Government Code Section 65303(f) requires a noise element of all city and county general plans, as follows:

"A noise element which shall identify and appraise problems in the community. The noise element shall recognize the guidelines adopted by the Office of Noise Control in the State Department of Health Services and shall analyze and quantify, to the extent practicable, as determined by the legislative body, current and projected noise levels for all of the following sources:"

"...noise exposure contours for both near and long-term levels of growth and traffic activity, such noise exposure information shall become a guideline for use in development of the land use element to achieve noise compatible land use and also to provide baseline levels and noise source identification for local noise ordinance enforcement."

The sources of environmental noise considered in this analysis shall include, but are not limited to, the following:

1. Highways and freeways.
2. Primary arterials and major local streets.
3. Passenger and freight on-line railroad operations and ground rapid transit systems.
4. Commercial, general aviation, heliport, helistop and military airport operations, aircraft overflights, jet engine test stands, and all other ground facilities and maintenance functions related to airport operation.
5. Local industrial plants, including, but not limited to, railroad classification yards.
6. Other ground stationary noise sources identified by local agencies as contributing to the community noise environment.

The noise exposure information shall be presented in terms of noise contours expressed in community noise equivalent level (CNEL). CNEL means the average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five decibels to sound levels in the evening from 7:00 p.m. to 10 p.m. and after addition of 10 decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m.

The noise contours shall be used as a guide for establishing a pattern of land uses in the land use element that minimizes the exposure of community residence to excessive noise.

The noise element shall include implementation measures and possible solutions that address existing and foreseeable noise problems, if any. The adopted noise element shall serve as a guideline for compliance with the state's noise insulation standards.

B. RESEARCH AND ANALYSIS

1. Background

The predominant generators of noise in any community are connected with major transportation systems. The need for reduction of increasing sound levels in California cities emanating from transportation facilities is generally recognized.

The approach to the preparation of the Noise Element involved the following steps:

- a. Definition of sound levels.
- b. Preparation of noise contour maps, present and 2000.
- c. Analysis of potential noise exposure of land uses contained in the General Plan.
- d. Formulation of acceptable noise standards for various land uses.
- e. Identification of implementation techniques to mitigate the impact of noise due to transportation systems.

2. Definition of Sound Levels

Sound levels are frequently given in the unit of dBA, which is a measure of sound intensity designed to weigh each frequency according to its magnitude relative to the varying thresholds of human perception. Since the weighing cannot reflect the response of a variable population, statistical human auditory data was used to construct the weighing factors. In particular, the human ear is more sensitive to high frequencies. Empirically, the dBA scale has been found to correlate well with human response to typical traffic environments.

EXISTING NOISE CONTOURS

LEGEND



CNEL NOISE CONTOUR (in db)

GENERAL PLAN

CITY OF HERCULES,
CALIFORNIA



Prepared by KCA ENGINEERS San Francisco



EXISTING NOISE CONTOURS

LEGEND



CNEL NOISE CONTOUR (in db)

GENERAL PLAN

CITY OF HERCULES,
CALIFORNIA



500 0 500 1000 1500 2000 2500 FEET

Prepared by KCA ENGINEERS San Francisco

PROJECTED NOISE CONTOURS

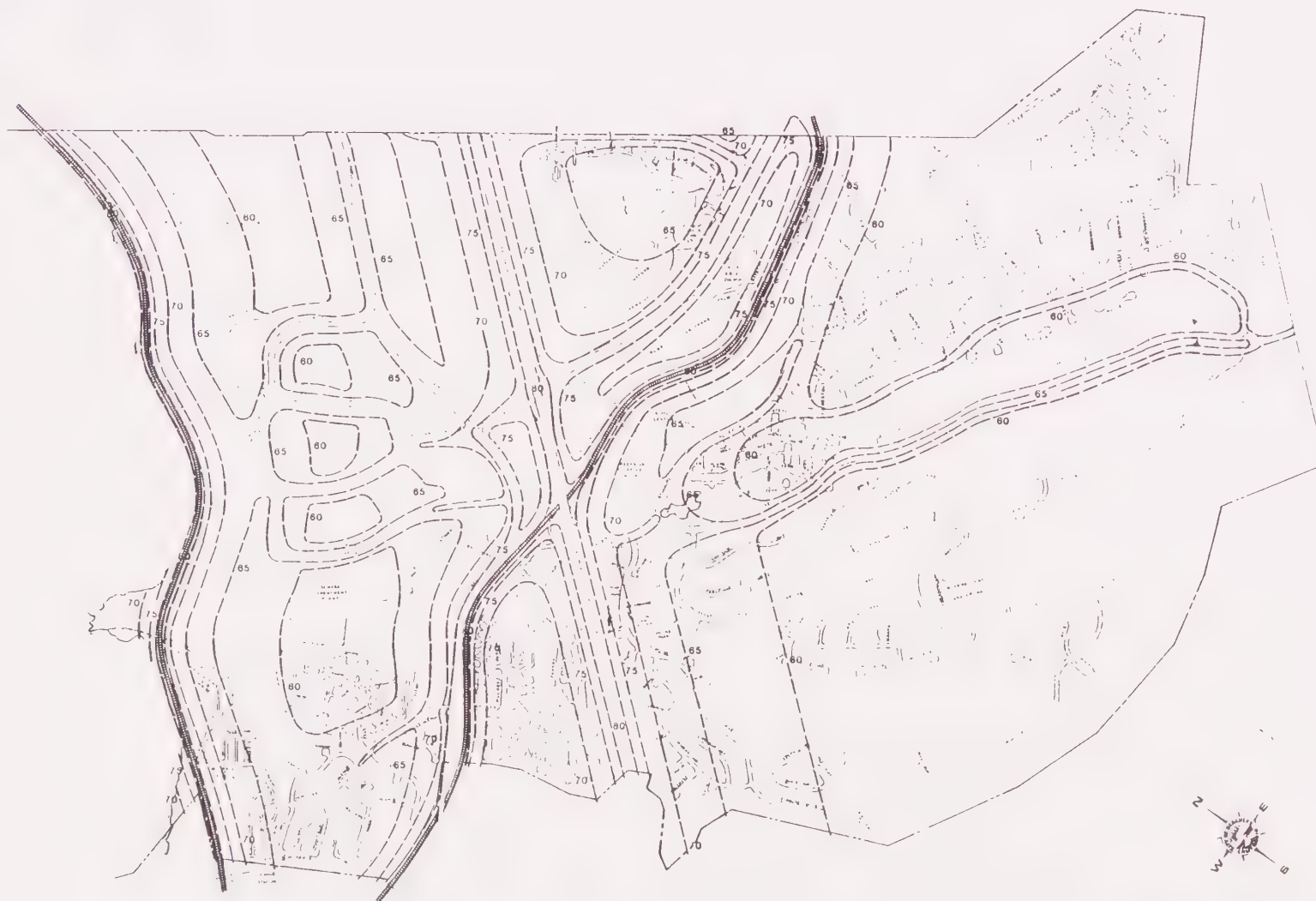
LEGEND



CNEL NOISE CONTOUR (in db)

GENERAL PLAN

CITY OF HERCULES,
CALIFORNIA



800 0 500 1000 1500 2000 2500 FEET

Prepared by KCA ENGINEERS San Francisco

PROJECTED NOISE CONTOURS

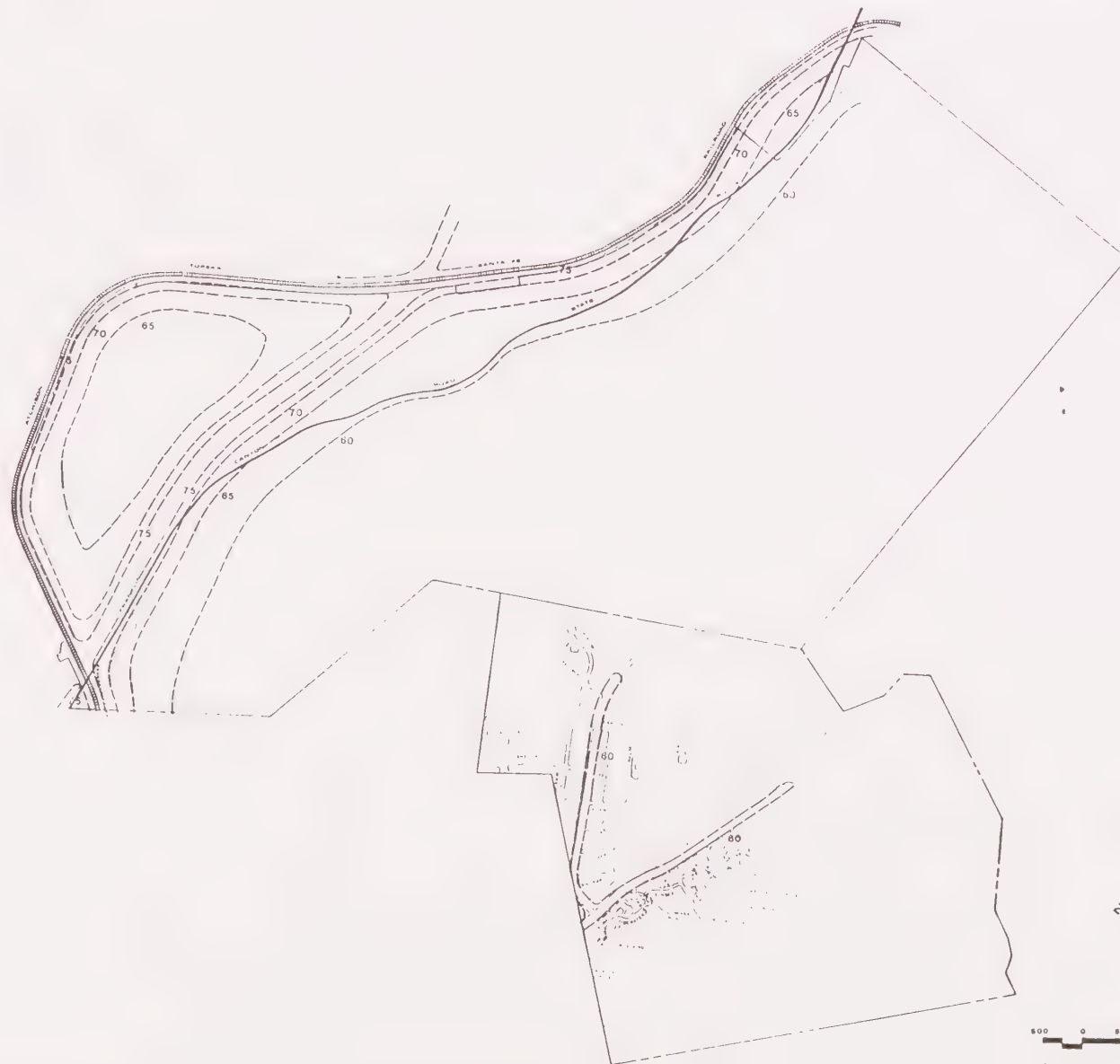
LEGEND



CNEL NOISE CONTOUR (in db)

GENERAL PLAN

CITY OF HERCULES,
CALIFORNIA



Prepared by KCA ENGINEERS San Francisco

travel speeds, the distribution of traffic by hour of day, and the percentage of trucks on a given street. The City chose to have the contours depict worst-case noise conditions and, therefore, terrain and other shielding effects were not included. The information used to develop the railroad contours was the number of trains on a given line, the number of engine units, typical length of a train, the average speed of a train, and the number of operations in the daytime and nighttime periods.

It will be noted at a glance that railroad noise is one of the dominant noise sources in the City of Hercules. At first this may seem incorrect, but unlike the traffic noise contours which represent an almost always present noise source, the railroad contours represent a noise source which is not present most of the time. The contours are located where they are because there are many operations on both the Atcheson-Topeka and Santa Fe line and the Southern Pacific line between the hours of 10 p.m. and 7 a.m. The CNEL required to be used in the Noise Element penalizes each nighttime operation by 10 decibels. Another way of looking at this is that each operation at night is equivalent to 10 daytime operations. This is done to take into account the increased sensitivity of persons to noise that occurs during sleeping hours.

C. POLICIES AND PROPOSALS

1. Objectives

The basic objective of the Noise Element of the General Plan is to protect the future citizens of Hercules from excessive noise levels which are annoying to the senses and can be detrimental to health. Subgoals of this basic objective are to:

- a. Insure that site design requirements for residential development are adequate to protect residents from sound levels which exceed the specified residential standards.
- b. Protect sensitive land uses, such as schools, hospitals, and libraries, from sound levels in excess of residential sound levels.
- c. Design streets to reduce, wherever feasible, excessive noise from such roadways.
- d. Restrict truck traffic in residential areas except for deliveries within the area or on designated

truck routes. To the extent possible, truck usage in residential areas should be limited to daylight hours.

- e. Provide sound protection, to the extent possible, along transportation routes in accordance with the adjacent uses of land.

2. Noise Level Standards

Over the years, many studies have been performed to determine how much noise is acceptable for different land uses. Table 15, based on data developed by the Office of Noise Control in the California Department of Health, summarizes this information. It shows, for various land uses, the noise level (Ldn or CNEL) below which the land use would be considered compatible with the exterior noise environment with no special noise insulation requirements. It also shows the noise level above which the land use would be considered unacceptable due to the difficulty of providing the required noise reduction. The table indicates that there is often a large range of exterior noise levels for which a land use could be made compatible if the necessary noise reduction features are included in the design of the project. The land use compatibility table used in conjunction with the noise exposure contours will therefore provide additional input into the decision-making process. Proposals to rezone parcels, for example, can be quickly evaluated for any potential conflicts with the existing noise environment.

D. IMPLEMENTATION

Implementation of the objectives and standards set forth in this element includes community planning procedures and noise attenuation techniques to eliminate much of the negative effects of noise through the design process. Some established communities have adopted noise ordinances where there has been a concern over rising noise levels. It is not recommended at this time that such an ordinance should be enacted; however, noise levels should be monitored as the City grows and develops.

1. Community Planning Procedures

Noise considerations will be an integral part of the community planning and design process. At each phase, more definitive information will be required to insure that the objectives and standards of the Noise Element are satisfied. In a more specific sense the noise exposure contours are the City's noise data base, and will be of interest to all who prepare EIR's or are involved in the environmental impact review process.

Table 15

LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS

| Land Use Category | Community Noise Exposure Ldn or CDEL, dB | | | | | |
|---|---|----|----|----|----|----|
| | 55 | 60 | 65 | 70 | 75 | 80 |
| Residential - Low Density Single Family, Duplex, Mobile Homes | | | | | | |
| Residential - Multi Family | | | | | | |
| Transient Lodging - Motels, Hotels | | | | | | |
| Schools, Libraries, Churches, Hospitals, Nursing Homes | | | | | | |
| Sports Arena, Outdoor Spectator Sports | | | | | | |
| Playgrounds, Neighborhood Parks | | | | | | |
| Golf Courses, Riding Stables, Water Recreation, Cemeteries | | | | | | |
| Office Buildings, Business Commercial and Professional | | | | | | |
| Industrial, Manufacturing Utilities, Agriculture | | | | | | |
| Auditoriums Concert Halls | | | | | | |
| Amphitheaters | | | | | | |

INTERPRETATIONNORMALLY ACCEPTABLE

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements. Indoor and outdoor will be pleasant.

CONDITIONALLY ACCEPTABLE

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice. Outdoor environment will seem noisy, but tolerable.

NORMALLY UNACCEPTABLE

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design. Outdoor areas must be shielded.

CLEARLY UNACCEPTABLE

New construction or development should generally not be undertaken. Construction costs to make the indoor environment acceptable would be prohibitive and the outdoor environment would not be useable.

The land use compatibility table will be helpful in identifying the potential noise impacts associated with a project during the initial study phase. Those who prepare EIR's will use the noise exposure maps to help them in identifying noise impacts.

a. General Plan and Zoning Proposals

The review of General Plan and zoning proposals considered noise in terms of general land use, open space, and traffic circulation patterns. Noise contour maps have been prepared for present and year 2000 noise levels. Areas of potential noise impact have been identified based on the community noise standards contained in this Element. These areas will receive special attention in subsequent planning and design reviews.

b. Neighborhood Plans

The proposed neighborhood plan will be reviewed in terms of present and future noise levels and means of noise attenuation. Techniques such as site and building design, barriers, and traffic planning will be considered and incorporated into the Plan where needed.

c. Tentative Maps and Planned Unit Developments

Tentative maps and PUD's will incorporate noise attenuation techniques into the site design based on more definitive noise considerations. These can be required as conditions to the approval of such maps and permits.

2. Noise Attenuation Techniques

Where noise levels exceed community noise standards for a proposed land use, one or more of the following techniques may be required to reduce the noise to acceptable levels.

a. Traffic Planning

Roadway design, traffic signalization and other traffic planning techniques can reduce noise caused by speed or acceleration of vehicles. The limiting of truck traffic to certain designated sections of the City can help in maintaining acceptable noise levels in residential neighborhoods.

b. Site Planning

Proper site planning to reduce noise impacts is the first area that should be investigated for a given project. By taking advantage of the natural shape and contours of the site, it is often possible to arrange the buildings and other uses in a manner which will reduce and possibly eliminate noise impact. Planned unit developments are particularly conducive to site planning techniques. Site planning techniques include:

- 1) Increasing the distance between the noise source and the receiver.
- 2) Placing non-noise sensitive structures such as parking lots, maintenance facilities and utility areas between the source and the receiver.
- 3) Using non-noise sensitive structures such as garages to shield noise-sensitive areas.
- 4) Orienting buildings to shield outdoor spaces from a noise source.

c. Architectural Layout

In many cases, noise reduction requirements can be met by giving attention to the layout of noise-sensitive spaces. Bedrooms, for example, will be considerably quieter if placed on the side of the house facing away from the freeway. Similarly, balconies facing freeways should be avoided. Quiet outdoor spaces can be provided next to a noisy highway by creating a U-shaped development which faces away from the highway. Proper architectural layout often can eliminate the need for costly construction modifications.

d. Noise Barriers

Noise barriers or walls are commonly used to reduce noise levels from ground transportation noise sources and industrial sources. Noise barriers serve a dual purpose in that they can reduce the noise level both outdoors and indoors.

To be effective, a noise barrier must be massive enough to prevent significant noise transmission through it and high enough to shield the receiver from the noise source. The minimum acceptable

surface weight for a noise barrier is 4 lbs./sq. ft. (equivalent to 3/4" plywood) and the barrier must be carefully constructed so that there are no cracks or openings. To be effective, a barrier must interrupt the line-of-sight between the noise source and the receiver. As an example of this relationship, consider a flat area with a housing tract next to a road. If there are no diesel trucks on the road, a 7-foot high barrier will reduce the traffic noise by about 8 dBA. If there are trucks then the noise from the trucks will only be reduced by about 4 dBA. The reason is that the stacks of the diesel trucks will be visible above the barrier and the noise path will not be completely interrupted.

Another important and often overlooked consideration in the design of noise barriers is the phenomenon of "flanking." Flanking is term used to describe the manner by which a noise barrier's performance is compromised by noise passing around the end of a barrier. Short barrier regardless of height, provide essentially no reduction in the overall noise level. The effects of flanking can be minimized by bending the wall back from the noise source at the ends of the barrier.

In addition to meeting acoustical requirements, noise barriers must be evaluated for possible maintenance problems, aesthetic and environmental considerations, safety conflicts and cost.

e. Construction Modifications

If site planning, architectural layout, noise barriers or a combination of these measures do not achieve the required noise reduction for the building in question, it will be necessary to modify the building's construction. Indoor noise levels due to exterior sources are controlled by the noise reduction characteristics of the building shell. The walls, roof, ceilings, doors, windows and other penetrations are all determinants of the structure's overall noise reduction capabilities.

In general, windows and doors are the acoustical weak links in a building. Often all that is required is that the windows be sealed on the noisy side of the building and an alternate means of ventilating the building be provided. Beyond this, thicker windows or double-glazed windows will be required. Doors should not be located on the side of the building facing a noisy source.

If they are, they should be solid-core doors and should be equipped with an appropriate acoustical door gasket.

In cases where more noise reduction is required, the ceiling/roof and/or the walls must be modified to provide the required noise reduction. The actual modifications will depend on the amount of noise reduction required.

f. The Noise Exposure Contours and The California Noise Insulation Standards.

The California Noise Insulation Standards (Title 24 of the California Government Code) for multi-family dwellings requires an acoustical report for dwellings proposed in areas where the CNEL exceeds 60 dBA. The purpose of the acoustical report is to demonstrate the manner by which the development will meet the standards for interior noise levels. The year 2000, 60 CNEL noise contour on the noise exposure map should be used to determine where a noise measurement will be required to determine compliance with the standard. In those cases where the development would be located in an area where the CNEL exceeds 60, on-site noise measurement should be required because local on-site conditions may cause somewhat different noise levels than the contours show. If the noise measurement shows that the on-site CNEL exceeds 60 then the acoustical report would be required. Developments located outside the 60 CNEL contour would not require a measurement, but in general, the noise contours slightly overestimate the noise level.

3. Noise Monitoring

Noise levels from transportation systems and other sources should be monitored in terms of community standards as the City grows. If levels are found to be increasing to unacceptable levels, the City may choose to adopt and enforce ordinances regulating various noise generators within the City. A single ordinance would facilitate enforcement of sound standards with cross-references to other sections of the City Code (e.g., building codes, truck routes). The Sound Ordinances might contain provision for:

- a. District sound performance standards.
- b. Special regulation of temporary construction.
- c. Control of special events, which may exceed sound level standards.

Adequate enforcement of the ordinance would require expertise necessary to accurately measure noise levels and analyze noise reduction alternatives. The role of enforcement could be handled by the police and/or the building department.

4. Noise Measurement Data

Noise measurements were made at 20 locations throughout the City of Hercules in December of 1979 and in January of 1980 by Charles M. Salter Associates, Inc., consultants in acoustics. Measurements were made during both daytime and nighttime hours on various days of the week. The purpose of the measurements were twofold: to validate the transportation noise contours developed for the City and to provide information on the noise environment in areas away from those transportation areas. This data would be valuable if and when the City were to develop a quantitative noise ordinance. At each site during each measurement, a Bruel & Kjaer type 4426 environmental noise level analyzer was used to sample the noise environment for 15 continuous minutes. During this time the observer noted significant noise sources. Specific data from these measurements is on file with the City. The Noise Element was reviewed and updated by Charles Salter Associates, Inc., in October, 1987.

FOOTNOTES

III. CIRCULATION/SCENIC HIGHWAY ELEMENT

- 1 City of Hercules General Plan Study, Traffic Analysis, Alan M. Voorhees and Associates, Inc.
- 2 Scenic Routes Element, Part of the General Plan of Contra Costa County, California, 1974.
- 3 As the neighborhoods have developed, these needed major facilities have been relocated so as to minimize impact on land use, open space, circulation and other elements of the General Plan.

IV. HOUSING ELEMENT

- 1 Projections '83, June 1983. See full report for detailed information on the assumptions and limitations of the regional projections.
- 2 Hercules sphere of influence was expanded by the County LAFCO in September 1981 to include 1,345 acres north of the city of Franklin Canyon and adjacent to the Rodeo-Crockett area. Plans for this area have not been prepared, and it is not included in discussion of residential land availability, since it will not be developed until after 1990.
- 3 Although the accuracy of the projected absolute 1990 figures is uncertain due to the highly unstable changes in housing values, the relationship between land values and total values is more constant.
- 4 San Francisco Chronicle, 7/17/83, and conversation with Steve Salomon, City Manager, 7/22/84.
- 5 Real Estate Council of Northern California, Trends
- 6 Ibid.
- 7 U.S. Census 1980 (STF-3)
- 8 Ibid.
- 9 Conversation with Hope Mapes, Housing Alliance of Contra Costa County, July 1, 1983.

- 10 "Low" and "Moderate" income refers to household incomes that are below 120% of the regional median household income. Current estimates indicate 120% of the median to be \$37,830 for Contra Costa County for a family of four.
- 11 All income figures are based on U.S. Department of Housing Urban Development Estimates on household income.

V. OPEN SPACE/CONSERVATION ELEMENT

- 1 Geologic and Preliminary Soil Investigation, Hercules, California, Cooper-Clark and Associates, Foundation Engineers and Engineering Geologists, May 1971.
- 2 Contra Costa County General Soil Survey and Report, August 1966.
- 3 Plant Materials Study, Lands of Hercules, California, Landscape Architectural Department, Toups Engineering, Inc., July 7, 1982.
- 4 A complete list of mammals, amphibians, reptiles and birds known to occur in the Hercules area can be found in "A Wildlife Assessment and Plan - Town of Hercules," prepared by Jones & Stokes Associates, Inc.
- 5 Plant Materials Study, Lands of Hercules, California, Landscape Architectural Department, Toups Engineering, Inc., July 7, 1982.

A Wildlife Assessment and Plan, Town of Hercules, Jones and Stokes Associates, Inc., February 5, 1973.

VI. SAFETY/SEISMIC SAFETY ELEMENT

- 1 The discussion on geologic hazards is summarized from the Cooper-Clark Geologic and Preliminary Soil Investigation.


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1. Town of Hercules, General Plan, April 1972
2. Planning Research Corporation, Draft EIR for City of Hercules: Proposed Zoning Ordinance and General Plan Revisions, April 1973.
3. City of Hercules, A Plan for Neighborhood One, December, 1974.
4. City of Hercules, Hercules Municipal Code: Title 10. Land Use.
5. Ojala, Cori & Keven McGrath, Remembering Days Past: Hercules, California 1879-1979, 1980.
6. City of Hercules, Draft EIR for Hercules Village, December 1980.
7. City of Hercules, Second Draft: Housing Element of the City of Hercules General Plan, July 31, 1981.
8. City of Hercules, Draft EIR of Proposed Revisions to the Housing Element of the City of Hercules General Plan, August 1981.
9. City of Hercules, Revision to ABAG's Housing Needs Report, March 24, 1982.
10. City of Hercules, Final EIR: Industrial Park, November 10, 1982.
11. City of Hercules, Hercules General Plan, February 1983.
12. City of Hercules, Draft EIR: Foxboro/Neighborhood 8, April 1983.
13. City of Hercules, Affordable Housing and Solar Housing Construction (Memo from Pam Dorway-Worley to Housing Mix Committee) January 14, 1980.
14. Contra Costa County Planning Department, Contra Costa County - A Profile, October 1977.
15. Contra Costa County Planning Department, 1975 Contra Costa County Special Census.
16. City of Hercules, Special Census, January 24, 1979.
17. Association of Bay Area Governments, Projections 83 and Local Policy Survey Update, June 1983.

ZONING

LEGEND

| | |
|---|--|
| RE1 | 1 ACRE RESIDENTIAL DISTRICT |
| RE¹/₂ | 1/2 ACRE RESIDENTIAL DISTRICT |
| R1 | ONE-FAMILY RESIDENTIAL DISTRICT |
| R2 | MEDIUM DENSITY MULTI-FAMILY RESIDENTIAL DISTRICT |
| R3 | MEDIUM, HIGH DENSITY MULTI-FAMILY RESIDENTIAL DISTRICT |
| R4 | HIGH DENSITY MULTI-FAMILY RESIDENTIAL DISTRICT |
| CR | RETAIL COMMERCIAL DISTRICT |
| CH | HIGHWAY COMMERCIAL DISTRICT |
| CM | COMMERCIAL INDUSTRIAL |
| M | INDUSTRIAL DISTRICT |
| MR | RESTRICTED INDUSTRIAL DISTRICT |
| H | HISTORICAL OVERLAY DISTRICT (SEE ORDINANCE EXHIBIT FOR CONCISE DESCRIPTION) |
|  | YEAR ADOPTED CONDITIONAL USE PERMIT RESOLUTION NO. |

CITY OF HERCULES,
CALIFORNIA



**HAZARDOUS WASTE MANAGEMENT
PLAN ELEMENT**

VIII

Approved by the City Council
December 1990

CITY OF HERCULES
FINAL HAZARDOUS WASTE MANAGEMENT PLAN

AN ELEMENT OF THE
HERCULES GENERAL PLAN

December 1990

Prepared for: CITY OF HERCULES
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Hercules, California 94547

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Folsom, California 95630

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EXECUTIVE SUMMARY

The City of Hercules has created this Hazardous Waste Management Plan (HWMP) to be included as an element of the City General Plan. The Plan is intended to achieve the twin goals of:

- o Safe and effective management of hazardous waste within the City of Hercules
- o Protection of public health and safety and the environment

In order to accomplish these goals, the Plan focuses on land uses and facility siting criteria as a major emphasis. The Plan also inventories existing hazardous waste generation and export, projects hazardous waste generation to the year 2000 and defines facilities siting needs and criteria. Policies and programs for effective management of hazardous waste now and in the future are identified as well as implementation measures for those policies and programs.

REGULATORY BACKGROUND

This Plan has been developed under the provisions of the Tanner Legislation (AB 2948 (1986), AB 1201 (1989)) which provides that cities may adopt a Hazardous Waste Management Plan provided that it is consistent with provisions of the respective County Plan. This Plan has been prepared to be consistent with the Contra Costa County Final HWMP (Contra Costa County 1989a) which was approved by the California Department of Health Services (DHS) on February 28, 1990. This Plan has also been developed to conform to the guidelines for HWMPs formulated by the DHS (DHS 1987a,b).

The City of Hercules was notified of approval of the Contra Costa County HWMP during June 1990. Following that notification, the City must adopt a Plan within 180 days if it wishes to do so. This Draft HWMP is being circulated for public comment so that it may be revised and ready for final approval within the statutory period.

HAZARDOUS WASTE GENERATION AND MANAGEMENT

The City of Hercules has been dealing with the issues of hazardous waste management, solid waste management and emergency response for several years. The City is a member of Joint Powers Authority (JPA) for solid waste management and for emergency response with four other Contra Costa County cities and the County to deal with these issues. The West County Solid Waste JPA is currently working with the requirements of AB 939 to address household hazardous waste, resource recovery and recycling issues. The West County Emergency Response JPA has been dealing with multi-hazard issues and has been instrumental in the establishment of a HAZMAT response team at the Richmond-Hilltop Fire Station.

Hazardous waste generated within the city limits is currently limited to one "large quantity generator" (as defined by DHS as those generating more than 1.0 tons per month of hazardous waste), a number of small quantity generators and household hazardous waste. The large quantity generator is Pacific Refining Company. This company accounted for approximately 57 percent of the approximately 741.3 tons of hazardous waste shipped off-site in 1988. Seven percent of the hazardous waste generated in the City in 1988 came from disposal of contaminated soil from site cleanups, while 26 percent came from small quantity generators (except waste oil), 7 percent from small quantity waste oil and three percent came from household hazardous waste.

Hazardous waste production in Hercules is expected to increase in the future both from expansions of existing businesses and the addition of new businesses. This Plan projects waste generation in the year 2000 both with and without waste minimization programs. It is possible that concerted cooperative waste minimization programs supported by both the City and local industry could result in overall reduction of hazardous waste on a citywide or regional basis.

LOCAL RESPONSIBILITIES

The Local Government Commission has identified local government responsibilities for hazardous waste management involving three categories:

- o Waste reduction
- o Enforcement
- o Providing for waste management capacity

Since the City of Hercules has a relatively small amount of waste generation within its borders, a regional approach is probably the best means of addressing these local responsibilities. The City will investigate the feasibility of a Joint Powers Agreement (JPA) to deal with hazardous waste management issues. Waste reduction programs could be better handled by an entity (such as a JPA) with a larger base of industries than are present in Hercules.

Enforcement of hazardous waste ordinances will be carried out by the City within its boundaries in terms of police response. The City will co-inspect industrial facilities as needed in coordination with the Rodeo-Hercules Fire Protection District. Other hazardous waste management issues will be coordinated with the JPA (if deemed feasible) or with appropriate county agencies.

Waste management capacity is only present in the City as on-site waste reduction capabilities at large quantity generator sites. There is no treatment, storage or disposal facility (TSD) in or near the City of Hercules. The City intends to explore siting of any facilities, as needed, on a regional basis in coordination with the existing JPA's, a newly created JPA for hazardous waste (if deemed feasible) or with Contra Costa County. This Plan contains siting criteria for TSD facilities.

PLAN POLICIES AND PROGRAMS

From the two major goals of the HWMP, this document defines a set of objectives and corresponding policies and programs with which the City of Hercules proposes to improve and more closely control hazardous waste management. The policies and programs involve: 1) adoption of administrative authority to more closely monitor and enforce hazardous waste ordinances, 2) establishment of coordinated efforts with appropriate regional and county agencies, 3) training for city workers, and 4) establishment of necessary programs to minimize hazardous waste produced by businesses and households.

PLAN IMPLEMENTATION

Recommendations for effective implementation of the HWMP include public education and participation, an ongoing data collection and analysis program and a waste reduction implementation program. Specific recommendations for facilities siting requirements, transportation and storage regulations for hazardous waste, emergency response coordination, monitoring and enforcement are included in the Plan. Also included are recommended management measures for large and small quantity generators, contaminated sites and household hazardous waste. The City of Hercules intends to implement hazardous waste management programs which do not cause duplicative effort or paperwork on the part of industry, small businesses or residents.

Implementation will occur through the City Manager and designated departments coordinating specific hazardous waste management tasks to be assigned as shown in the following chart. All emergency response implementation will be coordinated with the Rodeo-Hercules Fire Protection District (RHFPD) and appropriate county and state agencies. The City will investigate the feasibility of a JPA for hazardous waste management issues which would most likely be implemented with other west-county cities.

CHART OF DEPARTMENT RESPONSIBILITIES
FOR HWMP IMPLEMENTATION

| TASK | POSITION/DEPARTMENT | PAGE |
|--|-----------------------|------|
| <u>One Time Tasks</u> | | |
| JPA Development | City Manager | 14 |
| Establish Data Base | Planning Director | 64 |
| Waste Reduction Implementation | Planning Director | 64 |
| Review of New Facility Applications | Planning Director | 46 |
| City Facility Inventory | Public Works Director | 67 |
| <u>Ongoing Tasks</u> | | |
| Maintain Data Base | Planning Director | 64 |
| Public Education/Participation | Planning Director | 63 |
| Waste Reduction Programs | Planning Director | 64 |
| Household Hazardous Waste Program | Public Works Director | 63 |
| Transportation Programs | Public Works Director | 66 |
| Monitoring & Evaluation Programs | Planning Director | 73 |
| Small Quantity Generator Programs | Planning Director | 68 |
| Emergency Response Programs | Police Chief, (RHFPD) | 71 |

1.0 INTRODUCTION

Hazardous waste generation in Hercules occurs primarily at two facilities which represent the petrochemical and biochemical industries. These industries in addition to 1) other smaller industrial generators, 2) some non-industrial commercial businesses which deal in hazardous materials, and 3) residential households all create proportional amounts of hazardous waste. Safe and effective management of that waste to protect public health and the environment is a major concern of the Hercules City Government.

Due to a growth in commercial development in the City, hazardous waste management has become an important priority of the residents of Hercules. Based on this priority, in March 1990, the City contracted for the preparation of a specific City Hazardous Waste Management Plan (HWMP) to augment the Contra Costa County HWMP. This document will serve as the primary planning document for hazardous waste in the City of Hercules.

Hazardous waste is defined by the State of California in Section 25117 of the Health and Safety Code as:

25117. "Hazardous waste"

(a) "Hazardous waste" means either of the following:

(1) A waste, or combination of wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may either:

(A) Cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness.

(B) Pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

(2) A waste which meets any of the criteria for the identification of a hazardous waste adopted by the Department (DHS) pursuant to Section 25241.

(b) "Hazardous waste" includes, but is not limited to, RCRA hazardous waste.

(c) Unless expressly provided otherwise, the term "hazardous waste" shall be understood to also include extremely hazardous waste and acutely hazardous waste.

The City of Hercules Hazardous Waste Management Plan has been prepared pursuant to AB 2948 (Tanner, 1986) and to Final Guidelines for the Preparation of Hazardous Waste Management Plans (Department of Health Services 1987a,b). It has been prepared to be consistent with the goals, objectives and basic content of the Contra Costa County Final County Hazardous Waste Management Plan (Contra Costa County Community Development Department 1989). This Plan has been constructed to meet the specific needs of the City of Hercules and to conform with the goals and objectives of the citizens and the city government.

This HWMP consists of the following major components:

- o An introduction to the Plan and its purpose (Chapters 1.0 and 2.0)
- o A statement of goals, objectives and policies for the general management of hazardous waste and the potential siting of hazardous waste management facilities (Chapters 3.0 and 4.0)

- o An analysis of hazardous waste generated within the City, including the volumes produced of each waste category, and expected rates of hazardous waste generation to the year 2000 (Chapter 5.0, Sections 5.1,5.2)
- o A description of existing hazardous waste management facilities (Chapter 5.0, Section 5.3)
- o An analysis of the potential for reduction of the volume and hazard of hazardous waste at the source and/or the potential for recycling of such waste (Chapter 5.0, Section 5.6)
- o A discussion of the waste generated by light industrial, commercial zone businesses and residential households, and the need for programs to manage this waste (Chapter 5.0, Sections 5.14 and 5.15)
- o A determination of the need for additional hazardous waste facilities to manage the volume of hazardous waste currently produced or projected to be produced in the year 2000 (Chapter 5.0, Sections 5.4 and 5.5)
- o An identification of existing hazardous waste facilities which can be expanded to accommodate projected needs and siting criteria to be used in siting new facilities (Chapter 5.0, Section 5.7)
- o Definition of programs and a schedule for city actions necessary to implement this plan (Chapter 6.0)

References used in the report are cited in Chapter 7.0. Project staff are acknowledged in Chapter 8.0. Supporting tables, maps and diagrams are included in Chapters 9.0 and 10.0, with detail supporting technical material in Chapter 11.0.

The City of Hercules is located within an area of highly diverse land uses and jurisdictions (Figures 1 and 2). Land uses vary from industrial and office park areas to retail commercial centers, residential communities and open space, but the major land use is now residential. These varied uses are present within the city limits (Figure 3) and in adjacent cities and counties in the eastern portion of the San Francisco Bay Area.

The City of Hercules has legal jurisdiction over hazardous waste produced or hazardous materials handled within the city limits. The City also has a strong interest in hazardous waste and hazardous materials which may affect areas within the city limits through accidents, spills, transport or natural processes (runoff or leaching). Thus this report has focused on the City and an area northeast of the City termed the City's Sphere of Influence (Figure 3). The City has adopted a policy position of annexing properties within the Sphere of Influence, providing development of those properties ensure a continued high standard relative to environmental quality. Part of such assurance will be conformance of properties within the Sphere of Influence with this Plan.

This Plan has been developed in conjunction and with the assistance of Contra Costa County agencies including the County Planning Department, County Health Department and the Rodeo-Hercules Fire Protection District. In addition, the City of Hercules has worked with cities in nearby Contra Costa County in the development of this plan. Personnel from the State Department of Health Services have also contributed expertise and assistance.

2.0 PURPOSE

The passage of AB 2948 in September of 1986 authorized counties and cities in California to prepare Hazardous Waste Management Plans (HWMPs). Subsequently, every county in the State elected to prepare a plan to manage all hazardous wastes in their respective counties. While extremely beneficial to developing data and developing policies on a county level, these plans are not aimed toward the specific needs of cities. AB 2948 (Chapter 1504, California Annotated Code) therefore provides for cities to elect to prepare their own Hazardous Waste Management Plans provided that such plans are consistent with the adopted county plan.

The Hercules HWMP has been formulated to conform with the federal, state and county hazardous waste laws, policies and regulations, and to bring together in one document waste management strategies for the City of Hercules. It is the intent of the City to develop an integrated approach to hazardous waste management which is workable at a city level and which enhances cooperation between the City and other affected jurisdictions.

This Plan synthesizes data on present and projected hazardous waste generated, stored, treated, transported or disposed of within the City of Hercules. From these data, County, State and Federal hazardous waste management statutes, regulations and existing city ordinances, a set of policy guidelines for hazardous waste management have been formulated (see Chapter 4.0). Based on these policies and existing statutes and ordinances, a variety of implementation measures and city programs are recommended (Chapter 6.0). It is the City of Hercules' intent to establish these policies and programs in order to ensure effective hazardous waste management at the local level, including coordination with existing and evolving county, state and federal programs.

The City will take a two-phased approach toward establishing these programs. The first phase will be adoption of this Plan and revision of appropriate ordinances, and the second phase will be establishment and implementation of the appropriate programs as growth in the generation of hazardous waste in the City makes this necessary and feasible.

3.0 GOALS AND OBJECTIVES

This Hercules Hazardous Waste Management Plan (HWMP) synthesizes information and formulates policies which make possible achievement of the overall goals of the City and this Plan. Those goals are: 1) to achieve the safe and effective management of hazardous waste within the City of Hercules, and 2) to protect the health and safety of the public and the environment.

This Plan inventories current wastes generated within the City, projects waste generation anticipated for the planning period (to year 2000) and determines specific needs for facilities, policies, regulations and procedures to safely and effectively manage that waste, now and in the future. To accomplish the Plan's goals and the objectives outlined below, a number of city programs are identified within the HWMP.

The objectives of this Hercules City HWMP are as follows:

- o Accept responsibility and develop appropriate planning for the safe and responsible treatment and transfer or disposal of wastes within the city jurisdiction or in coordination with other jurisdictions.
- o Designate prevention of deterioration of public health or the environment caused by hazardous waste as a primary goal of the city government.
- o Adopt policies and targets which restrict further increases in and seek reductions in the volume and toxicity of hazardous waste committed to land disposal.

- Oppose increases of hazardous waste treatment, storage or disposal within the city limits unless such activities are consistent with this Plan, and laws and ordinances of the City of Hercules.
- Encourage as a first priority, waste minimization and source reduction of existing waste generation facilities.
- Encourage recycling, reuse and on-site treatment as second priorities for hazardous waste management techniques.
- Provide strong direction and support to actively enforce laws, regulations and ordinances concerning issuance of permits, inspection, compliance and data availability concerning the generation, storage, transportation, treatment and disposal of hazardous waste or the generation, storage and transportation of hazardous materials.
- Develop effective programs for waste management within the appropriate city agencies to achieve a coordinated strategy to deal with citywide waste management issues.
- Work in coordination with other applicable jurisdictions to formulate workable agreements for inter-jurisdictional policies regarding mutual hazardous waste management concerns.
- Investigate the feasibility of a Joint Powers Authority (JPA) or other regional agreement for the management of hazardous waste.

Taken as a group, these goals should provide an effective hazardous waste management effort within the City of Hercules, provided the City pursues effective and consistent development and implementation of the programs necessary to achieve these goals. Sections 4.3 and 4.4 summarize the major policies and recommended programs necessary to achieve these goals in a direct and effective manner.

4.0 LEGISLATION, POLICIES AND PROGRAMS

This HWMP is a comprehensive document covering hazardous waste management in Hercules from generation through reclamation, treatment and/or disposal. Specific recommendations are made in the plan to improve existing methods of hazardous waste management and to develop and implement specific city programs. The goals of these programs will be to continue and improve effective hazardous waste management to protect public health and the environment of the City of Hercules in the future.

The Contra Costa County Final Hazardous Waste Management Plan (Contra Costa County 1989a) states that the County is one of the largest generators of hazardous waste in the State and that most of that waste is treated in on-site treatment facilities. The remainder of the generated waste is managed in off-site recycling, treatment or disposal facilities, principally outside of the County. The county HWMP indicates that this export of hazardous waste for treatment is likely to continue in the foreseeable future due to the lack of available treatment, storage and disposal (TSD) facilities within the county, and economic factors. The HWMP indicates the intention of the County to work with other counties or the State to solve waste disposal problems which may not be solvable within the County.

The City of Hercules currently has within its borders one large industrial generator of hazardous waste (according to DHS definition, large quantity generators are those producing more than 1.0 tons per month of hazardous waste). In addition there are a number of Small Quantity Generators (SQG's) and a small amount of hazardous waste generated by small-scale commercial and residential users. Total generation of hazardous waste in Hercules is relatively small in comparison to nearby industrial parts of Contra Costa County.

4.1 LEGISLATIVE AND REGULATORY BACKGROUND

In September of 1986, Assembly Bill 2948 (Tanner) was enacted. This Bill, now a part of the State Health and Safety Code, authorized counties and cities to prepare Hazardous Waste Management Plans or supplemental hazardous waste management elements. Subsequent to passage of AB 2948, each county within the State elected to prepare a Hazardous Waste Management Plan (HWMP). These plans have been submitted to the State Department of Health Services and are undergoing final State approval and local adoption processes.

The county HWMPs provide general overall data for hazardous waste management at the county level. Certain cities, particularly those with a significant industrial sector, require more detailed information for hazardous waste management within their boundaries. AB 2948 provides such cities authority for developing such a city HWMP provided the city plan is consistent with the adopted county HWMP.

In 1989, the legislature passed AB 1201 (Tanner) amending the original Assembly Bill (AB 2948) on Hazardous Waste Management Plans. The language in AB 1201 leaves unchanged the authority for cities to prepare HWMPs, but does provide additional detailed guidance and some provisions for the process of siting new hazardous waste management facilities.

The Hercules City HWMP has been developed in accordance with AB 2948 (Tanner), AB 1201 (Tanner) and the California Department of Health Services Guidelines for the Preparation of Hazardous Waste Management Plans (DOHS 1987a). The Plan has also been developed to be consistent with the policies and provisions of the Contra Costa County Final Hazardous Waste Management Plan (Contra Costa County 1989).

4.2 PLAN COMPONENTS AND KEY RESULTS

This HWMP will serve as the primary planning document for the management of hazardous waste within the City of Hercules. The scope of this Plan includes the generation, storage, handling, recycling, treatment, transport and disposal of such waste. To the extent that hazardous materials are of significance as waste sources or as major hazards, such materials are also discussed herein. The document recommends programs which deal more thoroughly with hazardous materials issues which are beyond the scope of this Plan.

4.3 HAZARDOUS WASTE MANAGEMENT POLICIES

The City of Hercules intends to achieve the goals and objectives outlined in Chapter 3.0. The City has developed the specific policies listed below in order to accomplish this intention.

The City of Hercules' policies with respect to hazardous materials and hazardous waste shall be:

- o To adopt appropriate administrative authority to monitor and enforce city ordinances for businesses and other hazardous waste users within the city limits of Hercules.
- o To designate the City Manager as the lead coordinator with each department (see chart on page 6) responsible for the achievement of specific hazardous waste management goals for the City of Hercules. The Department shall accomplish these management goals by working with designated county agencies including the Rodeo-Hercules Fire Protection District, County Planning Department and County Health Department.

- o To bring all city facilities into compliance with proposed hazardous waste management policies of this plan, and with other existing statutes and ordinances at the county, state and federal level.
- o To train city employees who handle or otherwise come in contact with hazardous materials or hazardous waste in the proper safety procedures for management and handling of these substances.
- o To establish an enhanced hazardous waste and materials data base, oriented toward land use issues and zoning ordinance enforcement, to be implemented by the Planning Department, which will incorporate information from businesses which hold City of Hercules business licenses.
- o To enhance information submitted by local businesses regarding the generation, storage, transport and disposal of hazardous waste within the city limits of Hercules upon application or renewal of city business licenses.
- o To encourage waste minimization by local businesses through source reduction, product substitution, development of alternative technologies, recycling or other effective means.
- o To assist with coordination of county or regionally sponsored technical assistance programs to small quantity generators and other industry regarding hazardous material handling and hazardous waste management.

- To train current inspectors to recognize hazardous materials and hazardous waste management problems and to coordinate with fire department inspectors in order to ensure compliance with the Hercules Municipal Code and other applicable regulations.
- To direct the City Attorney to enforce all applicable ordinances pertaining to hazardous waste generation, transport, storage and handling, and to adequately deter accidental or purposeful violations of these ordinances.
- To encourage community participation in municipal household hazardous waste collection through educational and technical programs. Such programs might include distribution of educational materials, sponsoring educational events, arranging community hazardous waste collection days and investigation of potential for a permanent household hazardous waste collection facility, in accordance with the solid waste JPA.
- To coordinate city actions with the Rodeo-Hercules Fire Protection District and other emergency response agencies. To train city personnel in the emergency response procedures in interagency agreements through establishment of an interagency emergency response task force for this purpose.
- To appoint a person or committee charged with maintaining communication with other (neighboring) jurisdictions and arrange a mechanism for developing inter-jurisdictional waste management strategies for common problems involving the city and neighboring jurisdictions.

These policies would be implemented through specific programs. Each policy or group of policies serves as a mandate for establishment of a program or other set of actions which the City must establish in order to achieve an effective system of hazardous waste management.

4.4 PLAN RECOMMENDATIONS

Establishment of specific programs to achieve the goals and policies of this plan will allow the City of Hercules and its citizens to effectively control and regulate hazardous waste generation, treatment and disposal within the city jurisdictional limits. This Plan recommends that the following programs be enacted in accordance with the goals and policies listed above:

- o Establish and maintain a data base on hazardous materials handled, and hazardous waste managed within the City's sphere of influence (consistent with AB 2185 (1986)). The data base should contain information to facilitate land use decisions such as the permitting of new facilities which generate or use hazardous waste or materials and the proximity of development to hazardous sites as well as residential areas. This will encourage development of compatible uses and provide the City with mechanisms to develop appropriate regulatory guidelines and incident response procedures in these areas of the city.
- o Participate, in conjunction with appropriate County and State agencies, in monitoring programs for air and water which will adequately protect the health and safety of Hercules citizens from potential exposures to hazardous materials on a sustained basis and which will alert citizens to any incidents or short-term threats of exposure.

- o Work with the local business community to undertake and encourage a program of identifying waste minimization opportunities or procedures for local industry. Provide staff support to work with industry and accomplish these goals. The procedures developed should encourage source reduction, recycling, reuse and on-site treatment. Investigate the feasibility of developing such a program as part of regional program undertaken by a group of neighboring jurisdictions (west-county cities).
- o Enact a requirement for all generators or handlers of hazardous materials above a specified minimum (consistent with AB 2185 (1986) and AB 3777 (1989)) to provide the City with an on-file Hazardous Waste Business Plan and Risk Management and Prevention Plan. Generators and handlers subject to this requirement are those who generate or handle more than 55 gallons (liquid), 500 pounds (solids), or 200 cubic feet (gas at standard temperature and pressure) of hazardous materials annually. More detailed questionnaires regarding storage and handling of hazardous substances should be issued to each applicant for a City business license and issuance of the license should be contingent upon satisfaction of city requirements and ordinances pertaining to handling and storage of hazardous materials and waste.
- o The City should develop, in coordination with the Rodeo-Hercules Fire Protection District, a program to regularly inspect and/or monitor facilities which are determined to be or suspected of handling or managing hazardous waste or hazardous materials within the city's jurisdiction. Such inspection may be possible in conjunction with existing inspection programs.

- o Continue to work with other jurisdictions and establish lines of communication and programs for pursuing hazardous waste management on an area-wide basis, thereby solving mutual problems of inter-jurisdictional waste management.

Once the City has committed to developing the above programs, funding mechanisms will be required for achievement of continuing activity on each program.

5.0 TOPICS

This Chapter covers first the detailed information on current and projected hazardous waste generation in the City of Hercules based on shipping manifest data from the California Department of Health Services and information provided by Contra Costa County Planning and Environmental Health Departments. Small quantity generator information is based on business lists and categories provided by the City of Hercules. The remainder of the Chapter covers various aspects of hazardous waste treatment, storage and disposal facilities as mandated by AB 2948 (1986) and AB 1205 (1989).

To determine need for waste treatment, existing facilities are inventoried, followed by examination of the need for such facilities, effects of waste reduction on such needs and siting criteria for such facilities. The final sections of the Chapter deal with a variety of special topics including transportation and storage of hazardous waste, facility inspection and enforcement of regulations, implementation and emergency response procedures, existing contaminated sites and hazardous waste generated by small quantity generators and households.

5.1 CURRENT WASTE GENERATION

Hazardous waste within the city limits of Hercules (Figure 3) is generated primarily by two industrial facilities which deal with petroleum products, chemicals and biomedical products (Figure 4). The one large quantity generator is Pacific Refining Company. Bio-Rad Laboratories generates smaller quantities of waste, but does generate and handle flammable solvents as well as biological and low level radio active waste. Other small generators which have produced waste manifested on the DHS data base include the Mechanics Bank of Richmond Operations Center and the Caltrans District 4 Maintenance yard.

The substances and quantities of hazardous waste generated by these facilities and shipped off-site for treatment or disposal, based on DHS manifest data, is shown in Table 1 for the years 1986, and 1988. A brief description of the operations of these facilities follows in this section. The wastes from these facilities fall into a variety of waste categories which are discussed in detail below in Section 5.1.1.

Pacific Refining Company

Pacific Refining Company is a medium sized refinery with capability to produce fuel grade products from crude oil. The refinery generates air emissions which are permitted by the Bay Area Air Quality Management District (BAAQMD), effluents which are dischargeable directly to San Pablo Bay under the Company's National Pollutant Discharge Elimination System Permit (NPDES) and other effluents treated at the on-site sewage treatment plant (STP) prior to discharge. Process components at the facility include a crude unit, a vacuum unit, a catalytic refiner, a hydro-cracker, a stack gas concentration unit, boilers, cooling towers and the wastewater treatment facility.

Bio-Rad Laboratories

Bio-Rad Clinical Division is a facility located in the North Shore Business Park together with the Bio-Rad Laboratories corporate headquarters. The Bio-Rad Chemical Division is located in Richmond approximately 10 miles south of Hercules. Bio-Rad activities include radioactive materials research connected with biomedical/diagnostic test kits, testing and research using small quantities of flammable solvents and biological research including viral testing and associated biomedical technologies.

The Bio-Rad Hercules facility has two permits on file with the Bay Area Air Quality Management District (BAAQMD). One is an abatement permit for the use of HEPA equipment and the second is for use of ethanol spray disinfectant in an amount greater than five gallons annually. Radioactive wastes are permitted by the California Department of Health Service and are disposed of at approved off-site Class I facilities in Washington State (high level waste), held until half-life decay makes the material safe for sanitary landfill disposal (low level handling waste such as gloves and gowns), or concentrated using activated carbon and discharge of treated water to the sewer system as specified by State Permit (low level liquid waste). Other waste streams include solvent waste and biomedical waste which are discussed in detail in Section 5.1.1 below.

The Mechanics Bank of Richmond has its Operations Center in Hercules, where a large amount of document film developing is done. The resulting silver from photographic laboratory waste is diluted and discharged with wastewater to storm drains, and is thus not "shipped" off-site.

At the Caltrans District 4 Maintenance Yard, wastes include a diesel/asphaltic emulsion as well as waste motor oil. Total manifested waste quantities were reduced since some wastes were unnecessarily manifested as hazardous in 1988 (see Table 1).

5.1.1 Wastes Shipped Off-Site

Wastes shipped off-site by major industries within the city limits include both RCRA (wastes identified in the Resource Conservation and Recovery Act) and non-RCRA wastes:

- o API separator wastes from Pacific Refining Company (RCRA)
- o Bio-sludge wastes from Pacific Refining Company (non-RCRA)
- o Spent catalyst and miscellaneous wastes from Pacific Refining Company
- o Halogenated and unspecified solvent waste from Bio-Rad Laboratories

No known large quantities of hazardous waste are currently generated at facilities located outside of the city limits of Hercules, but within the City's sphere of influence. There are four facilities in this zone which do not have manifested waste streams according to the most recent DHS records (1988), however, these facilities may produce small quantities of waste. These companies are:

- o Unocal, Inc. (coke plant)
- o Asbury Graphite
- o Yellow Freight System
- o Loprest Company

The waste products from the two major industrial generators, Pacific Refining Company and Bio-Rad Laboratories, are the result of individual operations which are described briefly below. King Oil Company, an oil recycling operation, apparently ceased operations and generated hazardous wastes during the period 1976-1987.

Pacific Refining Company

Pacific Refining produces API-Separator sludge at approximately 150 dry tons annually. This includes KO48 and KO51 wastes which are both federally classified as hazardous wastes under RCRA (Resource Conservation and Recovery Act). Actual annual tonnages are shown in Tables 1 & 2. In addition, Pacific Refining produces non-RCRA bio-sludges at approximately 130-150 tons per year (see Tables 1 & 2). These sludges result from processing at the on-site wastewater treatment plant. These sludges are dewatered on-site with the filtrate being reprocessed by the sewage treatment plant (STP). The RCRA and non-RCRA solid waste is then shipped to the Class I disposal facility at Kettleman Hills. Due to the state ban on landfills accepting untreated hazardous waste, the RCRA "K" (KO48, KO51) wastes may have to undergo incineration in the future or be treated or recycled on-site.

Bio-Rad Laboratories

Bio-Rad Laboratories generates several levels of State permitted radioactive waste as discussed above. State manifested waste includes approximately 1.12 tons per year of unspecified solvent waste. In addition, the facility sterilizes (auto clave) and disposes of biomedical waste through shipment to the Richmond landfill or normal trash pickup depending on material type and quantity.

Other Sites

The other sites inside and outside the City have been discussed in summary form above. Contaminated sites are discussed further under Section 5.2.4. Small quantity generators are shown in the waste generation tables (Tables 3 and 4).

5.1.2 Wastes Managed On-Site

The two major industries in Hercules both have some programs to manage portions of their wastes on-site. Pacific Refining dewateres its RCRA and non-RCRA wastes returning filtrate to the Sewage Treatment Plant (STP) and shipping only dry solid waste off-site for disposal. Bio-Rad Laboratories uses auto-claving and radioactive decay to reduce the amount of their waste streams requiring special off-site disposal methods.

Some small quantity generators may treat wastes on-site. Details of this treatment are not available on a generator-specific basis, however, oil recyclers and other recycling or mobile treatment volume reduction services are the most typical forms of on-site treatment for these generators.

5.1.3 Small Quantity Generators

Small quantity generators are defined by the California Department of Health Services (DHS) as those generators whose monthly production of hazardous waste is less than 1,000 kilograms (approximately one ton). For the purposes of this report, the definition shall be those generators who produce less than one ton per month or approximately twelve tons annually.

Small quantity generators mainly produce wastes from their commercial or industrial processes in quantities too small to warrant economical on-site treatment. The bulk of these wastes are shipped to commercial recyclers, treatment or disposal facilities outside the City of Hercules.

Table 3 is a summary of the waste generation by waste type and waste group (with the exception of waste oil) from small businesses (small quantity generators or SQG) within the City of Hercules.

Table 4 is a summary of waste oil generated by small quantity generators. Table 4 is categorized according to the total number of firms per group, the waste oil generation factor and total volume of waste oil. Further information on calculations used in compiling Table 4 is contained in Appendix A.

The estimated amount of hazardous waste generation from small businesses was calculated by utilizing the Department of Health Services "Guidelines for the Preparation of Hazardous Waste Management Plans" (DHS 1987a). The Methodology used was the "No Survey Method" modified by utilization of available lists of permitted businesses within the City. This methodology is considered valid since DHS reports that the waste streams associated with small quantity generators is basically consistent throughout the nation.

The use of the "No Survey Method" for this report involved:

- o Identifying the number of businesses within the City of Hercules and categorizing the businesses into the appropriate "industry groups" as specified by the DOHS Technical Reference Manual (DHS 1987b)
- o The quantity of hazardous waste generated by each industry was calculated by multiplying the number of companies within each group by the U.S. Environmental Protection Agency generation factors
- o The small quantity waste generation was then reported as the percent of total waste for each waste type

The data base utilized for small quantity waste generation was established through the use of a business license list supplied by the City of Hercules (March 1990). The 238 operational small

businesses were categorized, by the City of Hercules, into 22 major SIC groups. Businesses not readily classifiable (33 businesses) were placed into a miscellaneous grouping (group # 20). The latter category were not included in the waste generation calculations since their waste streams could not be readily identified.

Additionally, 38 businesses were not included in the waste generation calculations since their business license had expired and the business was assumed non-operational.

A total of 238 small businesses were utilized in the waste generator calculations. The small quantity generator data base information is detailed in Appendix A. The City of Hercules reviewed the business type and categorized the business group into the appropriate SIC code group. The data base may be limited due to the fact that the SIC code was assigned to the small business rather than using the State's SIC designation based on information supplied by the business.

5.1.4 Household Wastes

Households produce hazardous waste through the use of products which contain hazardous substances or materials. Such products include:

| | |
|----------------|------------------------|
| Paints | Batteries |
| Solvents | Pesticides |
| Thinners | Photographic Chemicals |
| Pool Chemicals | Auto-body Products |
| Cleaners | Waste Oil |

and similar materials. Such wastes are produced in small quantities by most households, however, the cumulative effect on a landfill or other disposal center may become significant, particularly over a long period of time.

According to the DHS, the average household produces 7.5 pounds of hazardous waste per year. The Hercules General Plan Housing Element (Sedway and Associates 1990) has identified 16,500 residents in 5,300 occupied households. Therefore, the City of Hercules generates approximately 20.0 tons of household hazardous waste per year. This quantity is further classified in Table 5. The data was calculated by using DHS methodology which is based on a study of the composition of hazardous waste within a landfill. It has been estimated that in a city of 20,000 residents, .75 tons of toilet bowl cleaner, 2.75 tons of liquid household cleaners and .69 tons of motor oil are discharged into city drains each month.

Disposal of these materials and wastes into the sanitary landfill is illegal. Currently the City's solid waste stream is serviced by Richmond Sanitary Service. The final waste disposal is at the Richmond Sanitary Landfill. Once the landfill is full, the waste will be hauled to a transfer station with the final waste disposal at a remote site within the County.

5.1.5 Contaminated Sites

Known contaminated sites in Hercules are generally contaminated from past industrial practices. Within the City of Hercules, contaminated sites included in the U.S. Environmental Protection Agency CERCLIS Data Base and the State Department of Health Services Data Base (USEPA 1989; DHS 1989a,b) are shown in Table 6. The location of the major sites are shown in Figure 9.

The contaminated sites within the city limits are primarily contaminated due to past land use activities at the Hercules Powder Works Company site. These sites are under cleanup monitoring and enforcement by the State Department of Health Services. Portions of the sites have been cleaned up during the past few years and

soon may be deleted from the list. The Final HWMP will contain these updates.

5.1.6 Designated and Non-Hazardous Waste Facilities

There are no licensed Treatment Storage or Disposal (TSD) facilities within the City for the disposal of designated waste (special state category for certain hazardous wastes which are of less threat to human health or the environment than those classified as "hazardous wastes"). Municipal solid waste is managed by Richmond Sanitary and transported to a Class III landfill in Richmond.

5.1.7 Wastes Imported and Exported

Most industrial waste generated within the city limits is exported to outside facilities with the ability to recycle, treat, store or dispose of the waste. Wastes classified as hazardous and extremely hazardous which are not amenable to treatment or recycling are transported to the Class I Waste Disposal Facility at Kettleman Hills, California managed by Chemical Waste Management, Inc; or, in the case of Bio-Rad, wastes are shipped to the Class I facility in eastern Washington State.

5.2 PROJECTED WASTE GENERATION

This section projects generation of hazardous waste in the year 2000 based on current waste generation and assumed population increases within the City. Several scenarios are given, one depending on the achievement of waste minimization goals for current industries and another based on implementation of various proposed permits now before the City. The estimated generation of hazardous waste in the City for the year 2000 may range from 643.7

to 1,189.2 tons per year (based on industry projections) as shown in Table 7.

5.2.1 Large Industrial Producers

Large industrial hazardous waste producers will continue to produce the bulk of Hercules hazardous waste into the year 2000 under all scenarios. Large industries, designated as those that produce more than 1.0 tons per month of hazardous waste, presently include only Pacific Refining Company and Bio-Rad Laboratories.

5.2.2 Small Quantity Generators

Small quantity generators will remain a small but growing component of hazardous waste generation into the year 2000. An inventory of the City's small quantity generators shows that approximately 238 businesses produce hazardous waste. Some SQG's produce or use extremely hazardous substances as defined in Health and Safety Code Section 25500 et seq. Numerous other facilities are likely to use hazardous materials or produce designated waste.

The amount of hazardous waste estimated to be generated by SQG's in the year 2000 was calculated by applying a population adjustment factor of 14.0 percent to current figures. A scenario involving application of waste minimization was then calculated as an adjustment on these figures, using DHS waste minimization estimates (Department of Health Services 1987a). Projections of small quantity generator hazardous waste generation in the year 2000 are summarized in Table 8 as based on details shown in Appendix A, Table A-2.

5.2.3 Household Hazardous Wastes

Household hazardous waste will rise due to the increase in population if waste reduction measures are not effectively implemented. Reductions in current levels of generated household hazardous wastes are possible. Effective collection days, recycling and alternative materials can achieve reduction in the total quantity of hazardous waste generated and disposed. To achieve this reduction, the program must receive citizen support and participation.

The City of Hercules has a projected population growth rate of 14 percent between the year of 1990 and 2000 (Sedway and Associates 1990). This growth rate is consistent with the growth rate of Contra Costa County. If a growth rate of 14 percent occurs, the total number of occupied households will increase to 6,048 in the year 2000. The estimated amount of household hazardous waste generation in the year 2000 is calculated by multiplying 7.5 pounds by the projected number of households; therefore, the projected amount for the year 2000 is 22.7 tons. This data is shown in Table 8.

5.2.4 Contaminated Sites

Contaminated hazardous waste sites have been documented by the State of California on the Bond Expenditure Plan List, "Cortese List" and other documentation of known hazardous sites. Most of the known sites within the city limits of Hercules result from past land use practices and historical industrial usage. The sites are listed in Table 6.

Cleanup of contaminated sites has considerably added to the quantities of manifested waste listed in DHS data (See Table 1). Large annual fluctuations in waste amounts generally indicate that

some site cleanup has occurred. Such cleanups have added waste types including metals, asbestos and contaminated soils and similar substances to the data during the period 1986-1988. Projections of cleanups from contaminated sites to the future are difficult since waste cleanups are usually relatively short-term events. Since some contaminated site cleanups have already occurred and the two known sites are listed for remediation before 1995, Table 9 projects wastes from contaminated sites as zero in the year 2000.

Two large listed contaminated sites within the city limits are owned by Hercules, Inc., and Hercules Properties Ltd. The sites are discussed below.

Hercules, Inc.

This 41 acre site is located near the corner of San Pablo Avenue and Sycamore Avenue, and was once a portion of the Hercules Powder Work Company site. Various munitions and explosives were manufactured and stored at the site from the early 1900's to the late 1950's. The primary contaminants of concern found in the soil on-site include explosives and metals: 1) trinitrotoluene (TNT), 2) dinitrotoluene, 3) dinitrobenzene and 4) lead.

The primary threats to public health and the environment are associated with direct contact with the contaminated soil, and inhalation of contaminated dust particles by nearby residents. Remedial actions have been implemented and are currently ongoing at the site. One of the interim remedial measures (IRM's) included excavation and off-site disposal of lead contaminated soils. Currently, a 6-month pilot test to determine the effectiveness and rate of biodegradation is being conducted.

Little League Field

The Little League ball field was part of the site owned by Hercules, Inc. Contaminated soil was removed from the site in 1986. Continuing cleanup measures have included aeration and biodegradation of soil containing low level contamination on nearby land owned by Hercules Ltd.

Hercules Properties, Inc.

This 105 acre site at 560 Railroad Avenue is an inoperable nitroform fertilizer plant located on a portion of land previously used by the Hercules Powder Works Company. The site was used for manufacturing and storage of nitrogen fertilizers from the 1950's to the 1970's. The primary contaminants of concern identified in soils at the site include: 1) concentrated acids, 2) caustics, 3) heavy metals, and 4) asbestos.

The primary threats to public health and the environment are associated with direct contact with the contaminated soil, and inhalation of contaminated dust particles. Several phases of remedial investigation have been completed, and additional investigations are proposed to begin in July 1990.

5.2.5 New Waste Streams

New waste streams are indicated in Tables 8 and 9 in terms of increases in waste generation between 1986 and 1988. Further increases in waste streams are possible from existing industry and from new industries (see Section 5.2.6 below). Data on projected new waste streams from existing industry have been based on interviews of Pacific Refining Company (Knight, personal communication) and Bio-Rad Laboratories (McAll, Young, personal communication) and are included in Table 9. Potential new waste

streams for both facilities depend on general business growth. In addition, increases in present wastes streams depend on a potential facility expansion at Pacific Refining and a potential relocation to Hercules of the Bio-Rad chemical division.

5.2.6 Wastes from New Industries

There are no current applications for new major industries projected to locate within the Hercules city limits. Both Bio-Rad and Pacific Refining are currently discussing, with the City, potential plans for expanding new facilities (Garrett, personal communication). Small research and development firms, service businesses, gasoline service stations, drycleaners and other small quantity generators are expected to locate in the City during the 1990's in accordance with the City's plans for growth and development (City of Hercules General Plan, 1990). These facilities are expected to individually generate only relatively small amounts of hazardous waste.

Three areas within the City of Hercules are shown on potential siting maps for hazardous waste treatment, storage or disposal (TSD) facilities in the Contra Costa County Hazardous Waste Management Plan (Contra Costa County 1989). The City believes that county and city siting criteria coupled with buffer zones, health risks and other environmental factors make considerable portions of these potential areas unsuitable for use by most TSD facilities. Any waste streams from TSD's or other facilities which might apply for permits in these areas would be facility specific and cannot be projected at this time.

5.3 TSDF FACILITY INVENTORY

Currently there are no commercial treatment, storage or disposal facilities for hazardous waste within the Hercules city limits.

Previous operations in Contra Costa County included IT Vine Hill and Acme Landfill which previously accepted RCRA wastes and substances regulated as hazardous under Title 22 of the California Code of Regulations (CCR). These facilities are located approximately 15-20 miles east of Hercules and neither facility is currently active as a disposal facility, although the County currently operates a solid waste transfer station at the Acme Landfill site.

5.4 TSDF NEEDS ANALYSIS

The need for Treatment, Storage or Disposal (TSD) facilities in Hercules depends strongly on the interpretation of need for the City to process wastes other than amounts equivalent to those it produces. Industry within the City presently generate a relatively small amount of waste which is probably not easily or economically treatable except through expanded on-site treatment of at a larger regional facility.

The Contra Costa County Hazardous Waste Management Plan shows only three areas which meet potential siting criteria within the City of Hercules. These are a light industrial area, located between Interstate 80 and San Pablo Avenue, the Pacific Refinery Company site and the original site of the Hercules Powder Works Company (see Figure 7). Other areas of the City are precluded by the County's TSDF Siting Criteria.

The City of Hercules has recognized a need to pursue industrial and commercial growth in order to balance its residential community with an appropriate amount of jobs and services. The City's Economic Development Strategy Plan (City of Hercules 1990b) cites the need for strong economic development to be balanced against conservation and protection of environmental concerns. This report also recognizes that industrial development may lead to the need

for consideration of additional hazardous waste management issues. The City intends to deal with such issues for new facilities primarily through focusing on waste minimization and on-site treatment requirements when appropriate.

Table 10 shows a capacity needs analysis for the City of Hercules based on the assumption that the City should treat an amount of hazardous waste equivalent to that which it generates. The needs analysis shows that no hazardous wastes are treated or disposed within the City, and that 600-800 tons of hazardous waste generated (from the present to the year 2000) annually within its boundaries will be transported out of the county for treatment or disposal. Table 10 has been constructed based on small quantity generator and household hazardous waste information supplemented by DHS records and contacts with the City's large generators.

The large generator industry within the City does not treat wastes on-site, although Pacific Refining Company significantly reduces the weight and volume of its STP wastes through dewatering, filtration and sludge separation. Pacific Refining exports 300-400 tons per year to sites outside the City. This industry is expected to increase waste disposal to potentially 250 tons per year on-site and 550-1,000 tons per year off-site by the year 2000 if proposed expansion project is approved. On-site treatment/disposal capacity is presently non-existent, but could increase to 250 tons/year if Pacific Refining perfects a contemplated treatment/recycling-recovery project for waste which is currently shipped to off-site hazardous waste facilities. The proposed project would reduce waste toxicity through on-site processing.

The Richmond Landfill is expected to continue collecting municipal waste until full at which time solid waste will be shipped to a transfer station en route to a permanent permitted facility. As Contra Costa County and west-county cities further implement their

household hazardous waste programs, hazardous waste from these facilities are expected to be separated from other municipal waste and shipped to appropriate treatment/disposal facilities outside the County. Hercules' portion of household hazardous waste will increase slightly to up to 22.7 tons per year in the year 2000 without waste reduction programs.

5.5 TSDF CAPACITY EXCESS OR SHORTFALL

There are currently no on-site or off-site TSD facilities within the City of Hercules. The need for TSD facilities, defined as equivalent to the amount of hazardous material the City produces shows a relatively small current shortfall of TSD capacity within the City, based on two large quantity generators, small quantity generators and household hazardous waste.

In the year 2000 the presence of an excess or shortfall will be partly determined by hazardous waste reduction and on-site treatment programs that may be implemented at the major generators facilities and by the addition of waste treatment or recycling programs for small quantity generators and households.

5.6 HAZARDOUS WASTE REDUCTION

Hazardous waste reduction efforts may strongly affect the quantity of excess or shortfall TSD facility capacity. If all major facilities can process or significantly reduce their own waste or implement effective on-site treatment programs then the TSD facility need is only for processing hazardous waste from small quantity generators and households, plus whatever surplus waste cannot be treated by those major facilities.

Hazardous waste reduction in facilities outside Hercules would reduce the overall need for hazardous waste TSD facilities. The

extent of such potential reduction will be limited by institutional, physical and technical constraints. Projected reduction through implementation of source reduction and recycling programs is shown in Table A-2.

5.6.1 Projection of Hazardous Waste Reduction; Impacts on Facility Siting Needs

Table 8 shows estimated potential for hazardous waste reduction from SQG's and households based on the DHS Technical Reference Manual (DHS 1987) and information from local industry. This waste reduction will decrease the shortfall of TSD capacity, although projection data is presently insufficient to calculate the exact difference. Both Pacific Refining and Bio-Rad Laboratories plan to expand existing facilities and to reduce hazardous waste through waste management and possibly some forms of on-site treatment, recycling or resource recovery. The projected reductions cannot be closely quantified at this time (Knight, McAll, personal communication). This change will reduce the local need for siting new TSD Facilities.

Household hazardous waste reduction has been recently mandated by the State in AB 939, the integrated waste management bill. Reduction of solid hazardous waste and reduction of all solid waste by 50 percent in the year 2000 is required under this law. We have used the 50 percent volume reduction requirement as applying to household hazardous waste in Table 8 in order to generate projections to the year 2000.

Regional and statewide needs for TSD facilities will probably remain during the next decade. The decision regarding the relative perspectives of local versus regional or statewide needs as to the siting of TSD Facilities has yet to be resolved.

5.6.2 Barriers to Waste Reduction

Potential barriers to hazardous waste reduction include the following:

- o Technical barriers - impede a firms's ability to develop, evaluate or implement waste reduction methods. These barriers include 1) lack of information on waste reduction methods, 2) lack of in-house expertise to evaluate and implement waste reduction and 3) absence of readily available technologies.
- o Financial barriers - prevent a firm from undertaking a waste reduction project because of funding inadequacies.
- o Institutional barriers - can be either regulatory constraints or lack of awareness and commitment at the decision-making level in companies.
- o Physical barriers - such as lack of space on the property of the waste generator to install a facility or process, can impede waste reduction.

These barriers can often be overcome at the local government level through programs of communication and education on available hazardous waste reduction techniques and technologies. Often a joint program between local government and industry has proven highly effective at overcoming these barriers.

5.6.3 Local Waste Reduction Programs

The City presently has no in-place hazardous waste reduction program, however, one of the programs recommended by this plan would be to implement such a program as part of a JPA. Certain industries have already implemented waste reduction programs. Pacific Refining reduces its API Separator sludge and bio-sludge through dewatering, filtration and sludge separation processes. Bio-Rad Laboratories reduces biomedical hazardous waste through sterilization and its low-level radioactive waste through storage and subsequent half-life decay.

5.7 SITING OF HAZARDOUS WASTE FACILITIES

Section 25135.1 (d)(6) of the California Health and Safety Code specifies that each Hazardous Waste Management Plan shall include:

- o an identification of existing hazardous waste management facilities which can be expanded to accommodate projected needs
- o general areas or specific sites for new hazardous waste management facilities determined to be needed

In lieu of specific site identification, the HWMP may identify siting criteria to be used in selecting sites for future hazardous waste management facilities and should designate general areas where such criteria may be applicable. These requirements were formulated for the County Hazardous Waste Management Plans and it is not clear whether the intent of the legislation was to apply this criteria directly to cities where the amount of land available and existing land use may not lend itself to development for hazardous waste management facilities.

5.7.1 Intent

Siting criteria have been developed by the State Department of Health Services for the siting of hazardous waste management (TSD) facilities. The guidelines specify that individual sites to be established or selected by these criteria should at the time of the designation of a site and proposed new facility be required to complete a Risk Assessment and California Environmental Quality Act (CEQA) Evaluation for the proposed site. The criteria listed in Section 5.7.2 below are based on DHS requirements with minor modifications to ensure compliance with the Contra Costa County HWMP and City Code requirements.

Figure 6 shows City of Hercules Zones and Land Uses according to the Hercules Municipal Code, Title 10 (City of Hercules 1987) and the Hercules General Plan (City of Hercules 1990). Figure 8 shows Sensitive Areas, developed to include both public health and environmental considerations, which are inappropriate for TSD facility siting. These areas are based in part on the Siting Criteria discussed in Section 5.7.2 below and in part from specific considerations from the City of Hercules Municipal Code and General Plan.

5.7.2 Siting Criteria

The DHS siting criteria indicate that most TSD facilities, specifically those which are aboveground and similar in nature to any industrial plant can be sited in areas zoned for light or heavy industry. The guidelines also indicate that companies which produce hazardous waste may wish to locate near treatment plants in order to take advantage of services offered by such facilities. The DHS encourages the establishment of industrial tracts for such companies in order to minimize risks associated with the transportation of hazardous waste.

The DHS guidelines for HWMPs indicate that any existing hazardous waste treatment, storage or disposal facilities which do not meet the siting criteria shall be considered existing non-conforming land uses and consistent with the Hercules HWMP. These facilities are not subject to a finding with consistency with the HWMP when they are being reviewed for modification, enlargement or renewal of a permit from DHS unless a risk assessment prepared pursuant to the DHS procedures demonstrates a significant adverse impact on human health or the environment due to the continued operation of the facility. There are presently no off-site hazardous waste treatment facilities in Hercules. The only existing facilities in Hercules are on-site waste reduction and storage facilities at Bio-Rad Laboratories and Pacific Refining Company.

The DHS and Contra Costa County criteria have been reviewed by Hercules and modified or supplemented based on particular needs of and issues important to the city, based on local conditions and known citizen concerns. These criteria include both state and county criteria in addition to a few specific criteria and modifications developed by Hercules to apply to the City's specific concerns. The criteria are as follows:

SPECIFIC SITING CRITERIA

1) HIGH HAZARD AREAS:

(Those areas in which human or animal life could be jeopardized by fugitive or accidental emissions).

SEISMIC AREAS: No facility should be placed within 200 feet of an active or recently active fault.

FLOODPLAINS: Repositories may not be located in areas subject to 100 year flood events. Other facilities may be built in areas subject to 100 year flooding if protected by engineering solutions such as berms, raised foundations etc.

WETLANDS: No facilities shall be located in wetlands (marshes, swamps or bogs as defined).

HABITAT OF ENDANGERED SPECIES: No facilities should be located within critical habitat areas as defined in adopted general regional or state plans.

UNSTABLE SOIL: Facilities located within these areas should have engineered design features to assure structural stability. This area includes steep slopes and areas subject to liquefaction and subsidence due to natural causes.

MAJOR RECHARGE AREAS FOR AQUIFERS

Repositories should be prohibited within areas known or suspected to be supplying principal recharge for regional aquifers. Other facilities should be discouraged from locating in these areas. If so located, these facilities should provide properly engineered spill containment features, inspection measures and other environmental controls.

2) PUBLIC SAFETY:

DISTANCE FROM RESIDENCES: Repositories must provide a buffer zone of 2,000 feet unless owner demonstrates to DHS and the City that such a buffer is not required to protect public health and safety. All other facilities shall prepare a risk assessment which shall consider the need for buffering residences and other sensitive areas.

DISTANCE FROM IMMOBILE POPULATIONS: Risk assessments shall be performed at the time of permitting to determine the need for buffer zones between the facility and immobile populations.

PROXIMITY TO
MAJOR
TRANSPORTATION
ROUTES

Repositories should have good access to major transportation routes but may have to be more distant from waste generation sites due to requirements for larger land areas. Other facilities should be located so as to minimize distance from major transportation routes and designed to accommodate heavy vehicles. No facility should be so close to transportation corridors as to block access during an upset condition or other emergency. Road networks leading to major transportation routes should not pass through residential neighborhoods and should be demonstrated to be safe with regard to accident rates, excessive traffic and road design and construction.

BUFFER ZONES

A buffer zone will be established precluding development of facilities within 2,000 feet of major highways or arterials, residential neighborhood, immobile population or incompatible land use as defined by the Land Use Element of the City General Plan.

AIR EMISSIONS

TSD facilities or repositories potentially have significant hazardous air emissions shall be required to prepare a detailed Risk Assessment and to mitigate all health risks. Such facilities shall be discouraged from locating up wind from residential areas.

3) PHYSICAL LIMITATIONS OF THE SITE AREA:

PERMEABLE
STRATA AND
SOILS

Repositories shall conform to the requirements of the State Water Resources Control Board. All other facilities should have engineered design features including spill containment and monitoring devices.

NONATTAINMENT
AIR AREAS

Siting should not be precluded from these areas unless risk assessments performed as part of permitting, considering the physical and chemical characteristics of the specific types of wastes that will be handled and design features of the facility, show that emissions will significantly contribute to nonattainment of standards, that such emissions cannot be mitigated and that the emissions of the facility are significantly greater than those associated with transportation of hazardous waste out of this area.

PSD AIR AREAS Transfer and Storage Facilities could be permitted in Prevention of Significant Deterioration (PSD) areas, if they are necessary to handle potentially hazardous wastes generated by visitors or residents in recreational or cultural facility areas which are in the PSD zone. For other facilities, unless an analysis for a specific proposed facility shows that air emissions cannot be adequately mitigated, other facilities can be established in PSD zones. These facilities, however, cannot be located near or within National Parks, wilderness and memorial areas and other similarly dedicated areas.

PRIME
AGRICULTURAL
LAND Prime agricultural lands under California law may not be used for urban purposes unless an overriding public need is served. When siting hazardous waste management facilities in these areas, such overriding need must be demonstrated.

DEPTH TO
GROUNDWATER Repositories shall meet siting requirements of the State Water Resources Control Board. Other facilities may be located in high groundwater areas if the engineered design of the containment structure is capable of withstanding a failure because of geologic or soil failures which may arise.

4) LOCATION-SPECIFIC CRITERIA:

PROXIMITY TO
PUBLIC
FACILITIES Potential adverse impacts due to proximity to public facilities should be considered and appropriately mitigated through the risk assessment and design features. Public services including water and sewer service should be available where TSD facilities are constructed.

PROXIMITY TO
WASTE
GENERATION
STREAM All TSD facilities except repositories should be located close to the points of generation in order to minimize transportation risks.

INDUSTRIAL,
COMMERCIAL AND
SPECIALLY
ZONED LANDS Hazardous waste management facilities (other than residual repositories) are basically industrial facilities and should be sited in industrial zone. Facility siting is not limited to these zones if special zones are created.

| | |
|--|--|
| RECREATIONAL, CULTURAL OR AESTHETIC AREAS | Facilities other than low volume Transfer and Storage Facilities should not be permitted in these zones. |
| MINERAL RESOURCES AREAS | No Facilities should be sited so as to preclude extraction of minerals necessary to sustain the economy of the State. |
| OTHER LANDS | Military lands are not suitable for the establishment of public TSD facilities according to Department of Defense policies. Other state or federal lands may be suitable, as outlined by the foregoing criteria. |

5.8 TRANSPORTATION

Transportation of hazardous waste and materials presently occurs on all major transportation corridors in and near the City of Hercules. Both rail transport through the City via the Southern Pacific Railroad and Atcheson-Topeka and Sante Fe tracks and truck transport to major industries and small quantity generators within and near the city via Interstate 80, State Highway 4 and City streets are the result of commercial/industrial operations which require these materials (Figure 5).

The Southern Pacific Railroad and Atcheson-Topeka and Sante Fe tracks pass through the City along the San Francisco Bay shoreline and north of the downtown area respectively (Figure 5). Railcars of fuels, spent refinery wastes, solvents, acids and other materials are periodically sided along the tracks (along the shoreline and near State Highway 4) and trains carrying similar materials pass through periodically en route to local industries or points near the City. Truck traffic of hazardous materials and waste is particularly heavy on Interstate 80 and State Highway 4.

5.9 INSPECTION, TECHNICAL ASSISTANCE AND ENFORCEMENT

The City of Hercules or an appropriately constituted JPA shall develop and maintain a program for technical assistance, inspection and enforcement of hazardous waste management objectives contained in this plan. The City attorney shall be charged with ensuring that appropriate enforcement procedures are carried out against parties who negligently generate, store, spill or dispose of hazardous wastes or materials in such a manner as to endanger human health or the environment. The City or JPA in coordination with emergency services responders shall develop procedures for dealing with any such incident in terms of emergency response, cleanup and assignment of liability and costs to the responsible parties.

5.10 ORGANIZATIONAL RESPONSIBILITIES FOR IMPLEMENTATION

Primary responsibility for implementation of the Hazardous Waste Management Plan shall lie with the City Manager who will oversee city departments and coordinate with other agencies. Individual city departments shall implement assigned components as shown in the chart on page 6. Access to the data base will be given to all applicable departments and emergency response agencies serving the city. The Department of Public Works shall be responsible for all hazardous waste management activities at City facilities including compliance with handling and storage regulations.

5.11 EMERGENCY RESPONSE PROCEDURES

The City of Hercules and other west-county cities (Pinole, San Pablo, Richmond, El Cerrito) have been involved in a three year effort which formed an emergency response Joint Powers Authority (JPA) for dealing with mutual emergency response issues. The

cities have developed and adopted a state approved multi-hazard plan which includes dealing with toxic spills. The JPA has also accomplished:

- o Specific scenario training and operation of the Emergency Operating Center.
- o Close coordination between the cities and emergency responders (Rodeo-Hercules Fire Protection District, City Police, City Public Works Department).
- o Regular training of police and fire department in toxic substances response.
- o Creation of a HAZMAT Team in West-County, located at the Richmond-Hilltop Fire Substation.

The City of Hercules intends to continue working as part of the West County Emergency Response JPA on these issues. Emergency services responders utilize the County's Area Plan for Emergency Response which outlines duties and responsibilities of all responders.

The City has, in coordination with Rodeo-Hercules Fire Protection District, implemented a data base indicating the presence of hazardous materials handled, and hazardous wastes generated at any given site within the City subject to a business license requirement (much of this data is already on file from business plans specified by AB 2185). The minimum reporting quantities are 55 gallons of liquid, or 500 pounds by weight, or 200 cubic feet of compressed gases. Sources of information that may contribute to the development of the data base include the following sources:

- o Biennial reports filed with California Department of Health Services and the U.S. Environmental Protection Agency every March 1 on the even numbered years.
- o SARA, Title III reporting information required from sections 302 and 313 (provided to the "Administering agency" and local Fire Department).
- o California business plans as required per AB 2185 and amended by AB 2187 and AB 2189 (currently collected by Contra Costa County Environmental Health Division of the Health Services Department). These data are provided by the County to the City and the Rodeo-Hercules Fire Protection District under an existing Memorandum of Understanding (MOU).
- o Review and evaluation of current business license applications and subsequent revisions for future use.
- o Independent surveys from those industries and businesses currently located within the city limits.

This information, once collected, would be usable for reference material by the Rodeo-Hercules Fire Protection District, city police and other appropriate emergency response agencies and personnel if a chemical emergency incident was to occur. Effective emergency response procedures involve the input and planning from those agencies directly involved with administering and assisting any incidents. The primary objectives of emergency response planning should be to first protect human health, second the public, third the environment and forth, property. Emergency response procedures should serve the City's interests in the above four areas as a result of coordinated plans and policies with both governmental agencies and private industry support.

Some emergency response resources may be provided to the City from private industry through a contractual arrangement. The City receives copies of the "Hazardous Material Release Response Plans" and inventory programs from those current businesses in Hercules city limits from Contra Costa County Environmental Health Division of the Health Services Department (HSD). HSD is the administering agency and recipient of the Business Plans (per AB 2185) from industry that include:

- o facility emergency response procedures to incidents
- o locations, types, and amounts of hazardous materials
- o handling procedures for all such materials

This information can be applied to better enable the City to identify and evaluate those potential emergency response incidents that could occur, and what appropriate procedures the City may implement to manage such occurrences.

5.12 STORAGE REGULATIONS

The City will develop guidelines for storage of hazardous materials and hazardous waste applicable for industries or businesses that handle hazardous materials and/or accumulate hazardous wastes. The Uniform Fire Code (UFC) has promulgated guidelines for building design and construction to hazardous chemicals, along with state and federal regulatory requirements that specify the proper labeling, marking and containment specifications. The City may wish to coordinate with fire inspectors in order to ensure that local businesses are meeting all city hazardous waste requirements.

These regulatory requirements are currently enforced by the U.S. Environmental Protection Agency (EPA), the California Department of Health Services (DHS), and Contra Costa County Health Services

Department (HSD) through a Memorandum of Designation (MOD) entered into in 1983, with the State of California (DHS 1983).

Facility managers should be informed that they are required to separate incompatible hazardous materials/wastes and place both materials/wastes in containers in designated areas that do not present a fire hazard, reactive hazard, nor potential threat to human health, public health or environment. Part V and Part VIII of the UFC regulates the use and storage of hazardous substances used in special processes and several classes of hazardous chemicals not otherwise covered in the UFC, which are highly flammable, or which may react to cause a fire or make a fire especially difficult or dangerous to fight.

The Western Fire Chiefs Association amended Part VIII, Article 80 in 1987 which established storage, secondary containment and monitoring requirements for all classes of hazardous materials. This article also requires hazard identification signs for first responders and development of procedures for chemical spill responses.

In 1984, the Cortese and Sher Assembly Bills required the registration and permitting of nonexempt underground tanks containing hazardous materials. The Environmental Health Division of the County Health Services Department (HSD) is the local agency administering this program. The City should develop a parallel data base that identifies and list all known underground storage tanks (UST) in the city limits and regulatory states.

5.13 CONTAMINATED SITES

The City should identify, on the Hazardous Waste Data Base, the location and type of each contaminated site within the city limits or within 1.0 miles of the city limits which may affect city

property through leaching, air emissions or other processes. Known contaminated sites can be preliminarily identified from lists of sites published by the federal and state government agencies responsible for their supervision throughout the monitoring and cleanup (remediation) process.

Site lists consulted to identify known contaminated sites in Hercules sphere of influence include the Environmental Protection Agency's National Priority List (NPL) and CERCLIS data bases, the State Bond Expenditure Plan List, and the "Cortese List" of known toxic sites (U.S. EPA 1989, DHS 1989a,b). In addition, the City has identified known contaminated sites within the city limits using unpublished data files from Contra Costa County Planning Department (Contra Costa County, unpublished data). All of the data bases overlap to some extent with the others.

Contaminated sites identified from these lists are shown in Figure 9. There are a total of 2 listed sites within the city limits which have resulted from past land use practices. These sites are monitored by the State Department of Health Services and are currently being characterized in preparations for site cleanup, or have implemented cleanup action (Hercules, Inc. and Hercules Properties, Inc. sites). The City of Hercules tracks progress by DHS and the site owners in meeting cleanup schedules and requirements.

More major sites within 10 miles of the City include 5 listed State Bond Expenditure Plan Sites. These are shown in Table 6.

5.14 SMALL QUANTITY GENERATORS

In 1989, Small Quantity Generators produced approximately 191.63 tons of hazardous waste within the City of Hercules. A breakdown of the EPA Waste Types and California DHS Waste Groups are shown

in Table 3. Waste oil accounts for 48.67 tons as shown in Table 4 (based on DHS "No survey method").

Waste oil and certain other hazardous waste types are often collected by route haulers who operate from another jurisdiction. These haulers report and manifest their waste from their own location which may be outside the City of Hercules or outside Contra Costa County, since many such haulers service multi-county areas. Since small quantity generators often lack the technical knowledge and economic resources to manage their own wastes, these haulers provide an important source of waste recovery. The true number and type of route haulers in Hercules is not presently known; therefore, the waste oil and similar waste types generated by small businesses was estimated using the DHS "No Survey" methods for this report.

In an attempt to accurately assess the types, quantities and disposal methods of hazardous waste generated by small businesses, a SQG data base with accurate SIC code groups should be developed by the City or cooperating County agencies. The data base could identify the actual amount of waste generated, the availability of recycling or reuse and proper disposal method for each waste type. To facilitate the data base information collection, all hazardous waste generation should be disclosed by small businesses upon business license application or renewal. An audit of various industrial groups can be conducted to ascertain the accuracy of reporting of hazardous waste types and quantities generated.

The City of Hercules will evaluate the need to develop a small quantity generator program with emphasis on a regional program with neighboring cities. This program might include distribution of educational materials, providing a SQG hotline and/or coordinating a SQG waste consolidation program. These three options are described briefly in the points below:

- o Educational Materials - Educational materials can be disseminated as part of a SQG inspection program. Educational materials should address recycling, re-use options, waste minimization and proper disposal methods.
- o SQG Information Hotline - The City of Hercules should evaluate the potential feasibility of establishing a SQG hotline service. This service would provide an information clearinghouse coordinating with Contra Costa County, and responsible State and Federal Agencies. The service would provide technical assistance, contacts within these agencies and respective telephone numbers.
- o Coordinate an SQG Waste Consolidation Program - The City could enhance proper hazardous waste disposal for SQG's by coordinating a frequent consolidated collection program. Currently SQG hazardous waste is managed by individual companies. Consolidated collection by a service contractor could reduce disposal cost to each generator and serve as a valuable asset for consolidated bulk handling of used oil, solvents and other frequently generated wastes.

The City or JPA could work with the local Chamber of Commerce or other business groups to coordinate such programs.

5.15 HOUSEHOLD HAZARDOUS WASTES

Household hazardous waste management is one of the most difficult issues to deal with due to the small volume of waste and large numbers of necessary participants. Household hazardous waste in Hercules and nearby cities is currently being addressed (along with related requirements of AB 939) by the West County Solid Waste JPA.

That JPA is currently evaluating the advisability of providing oversight capability for household hazardous waste requirements in its jurisdiction. The JPA is also participating in the development of the West County Resource Recovery Center which is expected to provide a transfer station, recycling center and household hazardous waste capability by 1991. The sections below outline current and potential household hazardous waste management methods.

5.15.1 Current Household Hazardous Waste Management

Currently, common household hazardous waste is disposed of by depositing the waste into a residential garbage container; dumping the waste into the City sewer system via a sink or storm drain; pouring the waste onto driveways, streets and land or extending the storage of the waste in old and obsolete containers. The City and County are currently undertaking joint efforts which included a recent collection day for household hazardous waste in June 1990.

Household hazardous waste which is disposed of in a residential garbage container places a potential risk on human and environmental health. Through this disposal method a potential human injury could result from chemical exposure with respect to the refuse collector, transfer station worker, or landfill operator.

Additionally, the surrounding environment is at risk of contamination from the hazardous waste during the transferring, compacting, or final disposal process. Recent data has indicated that household hazardous waste, which is deposited in municipal landfills, has the potential to contaminate groundwater. Contamination occurs through absorption of the chemical which does not degrade similar to the other constituents of the landfill site.

Household hazardous waste which is disposed into a homeowner's sink or drain will migrate along the sewer system and eventually enter into a wastewater treatment facility. Wastewater treatment facilities are not designed to treat, store or dispose of hazardous waste; therefore, the waste stream may disrupt the normal wastewater treatment process or pass through the system untreated. If wastewater effluent or residual solids are toxic, the wastewater treatment facility could be fined or have other regulatory action imposed.

Household hazardous wastes that are disposed via a septic system may disrupt the normal septic process and pass through the system untreated creating a potential groundwater contamination. Hazardous waste that is dumped into street gutters, catch basins and storm drains contaminate the creeks which discharge to the Bay/Delta estuary.

Household hazardous waste such as waste oil and auto-body shop products were previously deposited on land as a form of weed control. This practice actually destroyed plants and had the potential to harm animals and contaminate groundwater. Illegal land disposal still occurs - this disposal technique may also include burying the substance in the back yard or improperly disposing of the waste on other property.

Many homeowners are unaware of the proper disposal procedures for household hazardous wastes, therefore, in some instances, the waste is stored indefinitely. This practice can produce unstable and reactive chemicals which represent additional hazards. Mixing incompatible chemicals can create a harmful potential chemical reaction such as an explosion, fire, vapor generation, heat, etc.

5.15.2 Recommended Household Hazardous Waste Management

The City of Hercules and the West County Solid Waste JPA should continue to assist the community in the proper household hazardous waste management procedures. This effort should promote and incorporate household hazardous waste collection days, educational programs, publicity campaigns and the development and implementation of a household hazardous waste component at the Richmond Transfer Station (West County Resource Recovery Center).

Household hazardous waste collection, recycling and disposal days should continue to be held and should be scheduled on a regular basis and available to all residents within the City of Hercules. Regular household hazardous waste collection programs can greatly reduce the volume of hazardous waste in the solid waste stream and wastewater treatment process. Additionally, a convenient collection program will provide an avenue for homeowners to dispose of their hazardous waste in a responsible manner and will discourage illegal disposal practices.

Along with the aforementioned collection efforts, the City of Hercules should continue to focus attention on public educational programs. The educational element should concentrate on homeowners awareness, waste minimization, safe handling guidelines and proper disposal techniques. Educational programs can be promoted in public school, various organizations, private clubs and public outreach centers. Household hazardous waste promotion programs can be sponsored through the City of Hercules or in conjunction with another agency or association.

Publicity can be a useful tool in the effort to increase public awareness of household hazardous wastes and the proper management of these waste streams. Publicity information can be distributed by direct mailing, posters, flyers, newspaper advertisements and

public service announcements on the radio and television. Annually, the City of Hercules generally identifies the recycling locations, provides information regarding household hazardous waste and encourages recycling efforts to all residents within the City of Hercules via the city newspaper, "Herculean". The City newspaper is distributed on a quarterly basis to all the residents with a Hercules postal address and the Viewpoint development in Rodeo. Additionally, a household hazardous waste management video has been produced by the City and is periodically shown on TV and Cable TV.

6.0 CITY HAZARDOUS WASTE MANAGEMENT PLAN IMPLEMENTATION

Implementation of the Hazardous Waste Management Plan can only result from the establishment of long-term programs for effective hazardous waste management. The Plan also deals in part with the establishment of programs which will encourage safer handling of hazardous materials. This Chapter outlines major procedures and estimated timeframes for carrying out the implementation of this HWMP.

6.1 PUBLIC EDUCATION AND PARTICIPATION

Public education and participation regarding hazardous waste and hazardous materials is probably the most important element in developing an effective HWMP. Only the public can give the City of Hercules the broad support it needs to carry out hazardous waste programs at the small quantity generator and household level. This HWMP recommends that the following programs involving the public be carried out during the first two years following adoption of the plan:

- o Consider establishing a regional group to oversee plan implementation and develop further public programs as necessary. Such a group might be composed of staff from neighboring cities and Contra Costa County
- o Establish household hazardous waste collection days and collection programs (similar to that held in early summer 1990)
- o Develop public seminars, workshops and other means to educate the public regarding hazardous waste and hazardous materials

Establishment of these and other necessary programs will help bring pressure to bear on generators, transporters and others involved with hazardous waste to pursue all available hazardous waste reduction and on-site treatment options available to them.

6.2 ONGOING DATA COLLECTION AND ANALYSIS PROGRAM

The City of Hercules will enhance an existing program for establishing and maintaining a data base of hazardous waste generation, treatment, transportation and disposal within the City's Sphere of Influence. The program will be implemented by the City Planning Department for the City Manager and will derive updated data based on questionnaires associated with business license applications and renewals. For facilities within the City's sphere of influence, but outside city limits, the City will rely on Contra Costa County to supply needed information.

6.3 WASTE REDUCTION IMPLEMENTATION PROGRAM

Waste reduction is the primary and preferred tool for coping with the problems of hazardous waste management according to the California Department of Health Services (DHS 1987a). Waste reduction, and waste minimization can be effectively implemented by local governments or regional groups through:

- o Educational outreach programs
- o Technical assistance programs
- o Regulatory programs

Such programs have proven extremely effective at both the county and city level in areas where they have been effectively implemented. Case study examples cited by DHS include Ventura County, where off-site treatment volume was reduced by 70 percent in a three year period, as well as in Orange County, Los Angeles,

Santa Clara County and the City of Hayward. Effective program implementation usually involves coordination by several local government agencies as well as coordination with other jurisdictions (Local Government Commission 1988).

The City of Hercules will seek to establish aggressive and effective programs for controlling production of hazardous waste, and for reducing the total amount of waste produced within the city through the proposed Joint Powers Authority discussed above. This JPA will be charged with establishing waste minimization goals and implementing waste minimization programs which may include a requirement of hazardous waste generators to prepare formal Hazardous Waste Minimization Plans as one tool to pursue waste minimization. If a JPA is not formed, the City will consider alternative programs to promote hazardous waste minimization.

The Hercules Municipal Code will be revised to conform with waste minimization requirements. Businesses generating hazardous waste will be required to submit the following information to the City of Hercules Planning Department:

- o An estimate of the quantity of hazardous waste generated
- o A review of feasible source reduction approaches, including the potential for input changes, operational improvements, production process changes, in-process recycling, and product reformulations
- o An identification of the source reduction measures which will be implemented
- o An evaluation of the cross-media impacts of the chosen measures

- o An implementation timetable

These elements will form the Hazardous Waste Minimization Plan for each business affected.

6.4 SITING

The siting of Treatment, Storage and Disposal (TSD) Facilities within the city limits shall be governed by the criteria developed in Section 5.7.2 of this document. The criteria include standard State criteria developed by DHS, criteria in the Contra Costa County Hazardous Waste Management Plan (Contra Costa County 1988) and additional criteria specific to the City of Hercules.

6.5 TRANSPORTATION

The Circulation Element of the Hercules General Plan currently contains no explicit references to transport of hazardous waste or materials. The plan element does designate two roadways as scenic routes including State Highway 4 and San Pablo Avenue. These roadways, however, are not specifically restricted from hazardous waste transport. The downtown area of Hercules is generally considered by the city to be inappropriate for transport of hazardous waste, however, these areas are not specifically restricted in any way against transport of hazardous waste.

The City is currently in the process of amending the City General Plan through addition of this element (HWMP) to include restrictions on hazardous waste facilities, however, these restrictions will not affect transport of waste to and from these facilities. The City should update the Circulation Element of the General Plan to include both guidelines and restrictions for hazardous waste carriers from roads which are environmentally

sensitive, lie along high density residential or commercial areas, or pose undue risk of public health and safety.

Rail transport of hazardous materials occurs in Hercules on two rail lines, Southern Pacific and the Atcheson-Topeka and Santa Fe. The update of the Circulation Element should also address risks associated with these transport facilities.

6.6 STORAGE

In early 1984, the Environmental Health Division of the County Health Services Department (HSD) was granted the power to administer the underground tank program in the County. Currently, HSD administers the countywide program. The HSD has currently identified 1,100 tank owners in the County and notified them of newly promulgated state requirements. The City should evaluate generating a data base in coordination with Rodeo-Hercules Fire Protection District, for those underground storage tanks (UST) or aboveground tanks located in Hercules to identify and track the progress of known tank problems.

Hercules should also provide a review of currently promulgated storage requirements to businesses that obtain or renew business licenses. Additional data could also be collected from the industries on hazardous materials/wastes upon renewal of licenses. A city hazardous materials storage permit could be an additional item for future consideration to obtain certain basic information for later review and future data base development. Current storage requirements enforced by the County are now made readily available to businesses in conjunction with license renewal applications.

The City should also bring city facilities into compliance with hazardous waste and hazardous materials regulations. This could be accomplished through a self-audit of city facilities.

6.7 CONTAMINATED SITES

Cleanup (remediation) of contaminated sites is generally the responsibility of the State and Federal Government or private owners of the sites. To date, local government has not become heavily involved in such cleanups. The City can, however, through maintenance of a contaminated site list and periodic checking with the appropriate regulatory agencies, maintain pressure to have sites within the City's sphere of influence remediated as expeditiously and in the most environmentally sound manner as possible.

6.8 SMALL QUANTITY GENERATORS

Hazardous waste from SQG's is often disposed of through inappropriate means because the wastes are generated in amounts small enough that use of certified route haulers is not perceived to be economical or necessary by the generators. The generator may not be aware of hazardous waste management requirements and penalties. The generator may also be unaware of alternative technologies for waste management including source reduction, recycling, treatment and disposal. The SQG waste program can be successfully implemented by the City of Hercules through:

- o Educational Materials
- o SQG Information Hotline
- o SQG Waste Consolidation Program

The City of Hercules should evaluate the implementation of a SQG program on a regional west-county basis following the adoption of the Hazardous Waste Management Policies contained in this plan. The designated lead department shall organize and implement the SQG Program.

6.9 HOUSEHOLD WASTES

The City of Hercules has developed a JPA with neighboring cities to deal with solid waste issues and is developing required household hazardous waste programs as required by AB 939. The proper management of household hazardous waste in the City of Hercules can be achieved by: 1) utilizing collection days, 2) educational and publicity programs, and 3) developing and implementing a household hazardous waste component at the future Richmond Sanitary Transfer Station. The City members of the solid waste JPA should work with the county, state and federal government along with private sectors to ascertain proper household hazardous waste management. Proper household hazardous waste management will minimize the entry of this waste into the municipal solid waste stream, minimize the entry of this waste stream into the wastewater treatment facility, and potentially eliminate or reduce illegal waste disposal.

6.9.1 Collector Days

The City of Hercules and the solid waste JPA should further focus efforts around regular and frequent household hazardous waste collection, recycling and disposal days. To make the collection days successful, they should be on a regular basis, held in various locations throughout the city, convenient and homeowner friendly. The collection program enables household hazardous waste to be properly managed by:

- o Promoting household hazardous waste awareness
- o Promoting waste minimization and recycling
- o Disposing of the waste

An alternative approach to the collection program is a permanent collection point such as the Richmond Transfer Station or a

permitted hazardous waste management facility. Richmond Sanitary Service is evaluating a phased approach program to add a household hazardous waste component to the Richmond Transfer Station.

6.9.2 Education Programs

The household hazardous waste education program shall target:

- o Homeowner awareness of household waste
- o Alternatives to hazardous waste production
- o Safe handling practices of household waste and appropriate disposal

The program will improve public understanding both of the proper handling and disposal of household hazardous waste and of alternatives to household products which contain hazardous materials. This program will be implemented by the solid waste JPA of which Hercules is a member.

An educational outreach could be achieved by developing educational materials such as flyers, brochures, pamphlets, posters, videos, etc. The educational materials will encourage the public to reduce their purchase of products with hazardous ingredients, to completely utilize the product containing hazardous ingredients, to recycle as appropriate and finally to utilize proper disposal mechanisms. The educational information can be distributed by direct mailing (i.e., Herculean, garbage bill, etc.), posters and flyers, newspaper advertisements and public service announcements on the radio and television.

Publicity campaigns can be sponsored by the City in public schools and various organizations and affiliations to further educate the residents. The campaign can incorporate contests with regard to developing posters, flyers and brochures development, which

concentrate on alternatives to waste production and proper disposal.

6.9.3 Responsibility and Resources

The household hazardous waste program should be developed and implemented as part of the solid waste JPA. The funding of this program can be costly and should be supported by residents of the cities in the JPA. A commonly employed and effective means of resource support is the placement of a nominal surcharge on all household garbage bills. The surcharge is used to properly dispose of hazardous waste.

6.10 EMERGENCY RESPONSE

The City will continue to coordinate with Rodeo-Hercules Fire Protection District and to operate as part of the West County Emergency Services JPA. In addition, the City should evaluate the need to adopt new city guidelines that coordinate city emergency management resources with the County Hazardous Materials Area Plan. Specific items that could be identified for city planning purposes could focus on the potential scenarios present in Hercules from existing and future industries. City, county, state, federal and private industry resources should be identified and information on their availability and resources be made available to city management personnel. Elements of city planning may include:

- o Information gathering (data on likely and worst case hazardous waste spills or other HAZMAT incidents)
- o Identify local agencies and their roles in a chemical emergency response incident
- o Development of any applicable city ordinances

- o Communication of resources and emergency response information to industries in Hercules
- o Distribution of any restrictions and/or alternatives, if chosen, to the public
- o Provide additional training to city personnel responsible for implementing any changes

6.11 REGULATIONS, ENFORCEMENT AND SURVEILLANCE

The City of Hercules is currently revising and updating the City General Plan (this HWMP) to contain provisions appropriate to dealing with hazardous waste produced and hazardous materials handled within the city limits.

The City of Hercules should train its current building and public works inspectors to recognize problems associated with hazardous waste and hazardous materials and to coordinate with fire inspectors on selected inspections. City police, building inspectors and other code enforcement inspectors have been trained in the basic elements of proper hazardous waste and hazardous materials management and handling. Such training should be continued and increased as appropriate. The City officials will coordinate with appropriate county officials to enforce laws and regulations.

6.12 ORGANIZATION AND RESPONSIBILITY

The two key departments responsible for hazardous waste and hazardous materials monitoring and enforcement under the direction of the City Manager will be the City Planning Department (land use related issues) and the Department of Public Works (city facilities). In addition, the City Attorney, coordinating with the

Finance Director, has jurisdiction over obtaining recompense for the City following emergency response incidents which are caused by transport or improper handling of hazardous wastes or materials within the city limits.

The Hercules police force and Rodeo-Hercules Fire Protection District shall respond appropriately to hazardous waste or material spills or incidents at facilities which endanger public health or safety. The City police shall coordinate with the State Highway Patrol, the Rodeo-Hercules Fire Protection District and other agencies having authority over such incidents. Whichever entity is the first responder generally establishes incident control until relieved by the appropriate incident commander (dependent upon jurisdiction).

6.13 FUNDING

Funding sources will be required for compiling and maintaining the City's data base, for developing and maintaining regulatory programs and for monitoring and inspection programs. Funding for the data base and associated activities can probably best be accomplished through a hazardous waste fee collected in association with collection of the City business license tax since the data for the data base will be acquired through the business license process. Funding for regulatory programs and for monitoring and inspection programs could be developed through a specific charge levied on hazardous waste producers or hazardous materials handlers. The Planning Department will work with the Finance Department to establish fees for such programs.

6.14 MONITORING AND EVALUATION

A critical component of the success of the City of Hercules for managing hazardous waste and hazardous materials within its

boundaries will be properly coordinated and implemented monitoring and evaluation programs. These are recommended to include:

- o monitoring of generators of hazardous waste and hazardous materials to ensure compliance with the terms of this Hazardous Waste Management Plan, with the City Municipal Code and the City General Plan
- o Development of a procedure for evaluating compliance programs for hazardous waste generators and hazardous materials handlers including waste minimization requirements
- o Development of a procedure for tracking the progress of responsible agencies in cleaning up hazardous sites within the City's sphere of influence and for identifying responsible parties for sites not under active cleanup by agencies
- o General monitoring of hazardous indicator parameters (such as toxic air contaminate) in the City's air, water and soil as necessary to protect human health and safety and the environment
- o Designation of a person or task force to work with neighboring jurisdictions on a broad spectrum of hazardous waste issues.

Utilization of these monitoring and evaluation programs will accomplish the City's goal to carefully monitor hazardous waste and to coordinate the various City programs.

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8.0 PROJECT STAFF

Network Environmental Systems Staff who participated in this project include:

- o Dr. G. Bradford Shea, Project Manager
- o Mr. Jerry Bucklin, Contract Administrator and Policy Analyst
- o Ms. Geri Silva, Hazardous Materials Analyst
- o Mr. Robert M. Boggs, Chemical Engineer
- o Mr. Joseph Wasilewski, Environmental Engineer
- o Mr. Bruce Lazarus, Health and Safety Expert
- o Ms. Mary Shea, Word Processor

Network Environmental Systems, Inc. also wishes to thank City Staff who participated in and helped provide information for this project. These include:

- o Ms. Marilyn Leuck, City Manager
- o Mr. Kevin Garrett, Planning Director
- o Mr. William Bullard, City Attorney
- o Mr. Ron Richardson, Public Works Director

In addition, many people from various industries and government agencies provided data and information without which this Plan would not have been completed. These include:

- o Mr. Dennis Salmi, Rodeo-Hercules Fire Protection District
- o Mr. John Knight, Pacific Refining Company
- o Mr. David McAll, Mr. Bill Young, Bio-Rad Laboratories

In addition to these major contributors, others too numerous to mention assisted the effort by supplying data and information on specific facilities.

970 FIGURES

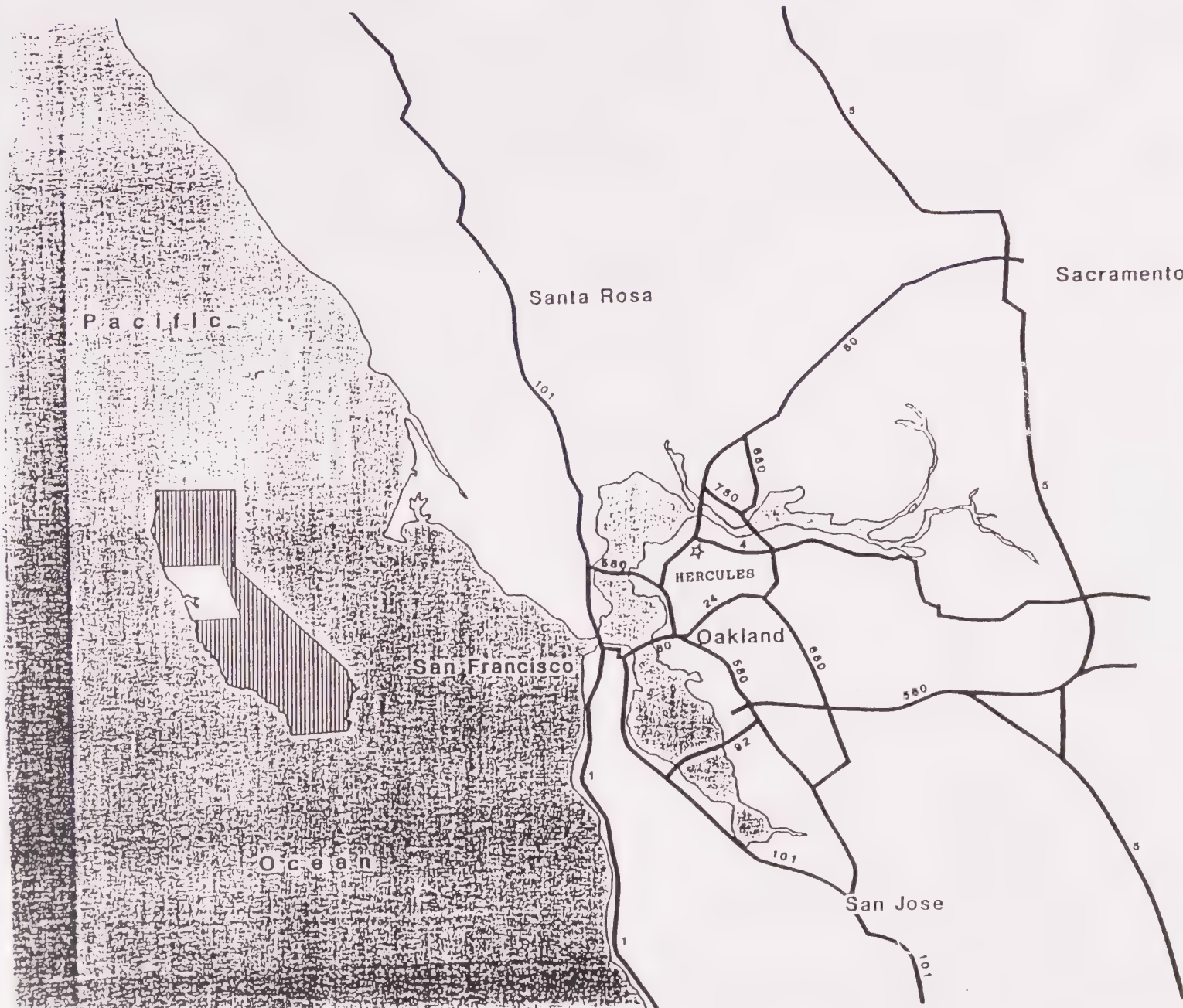


Figure 1
AREA MAP

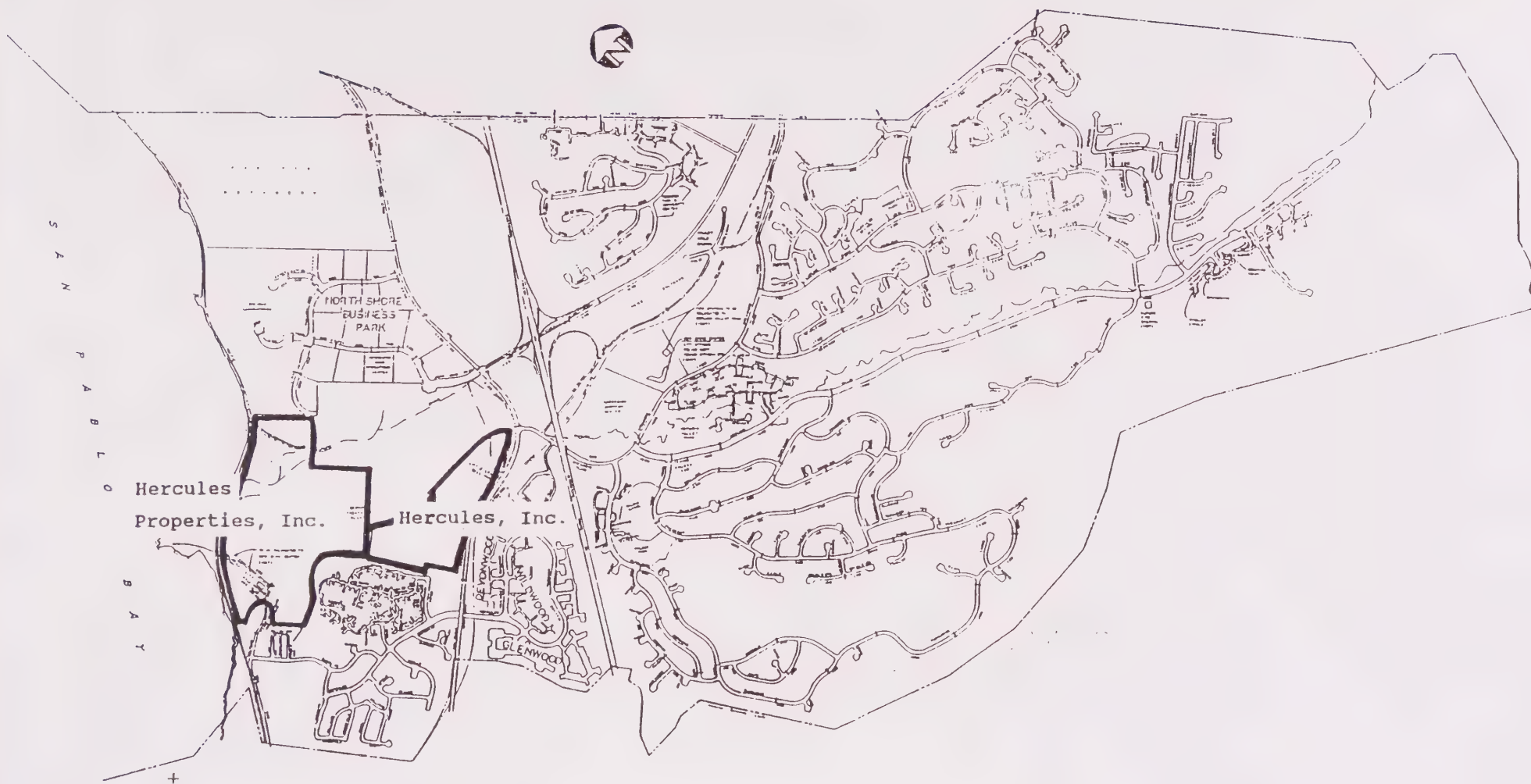


FIGURE 9.
MAJOR KNOWN CONTAMINATED SITES



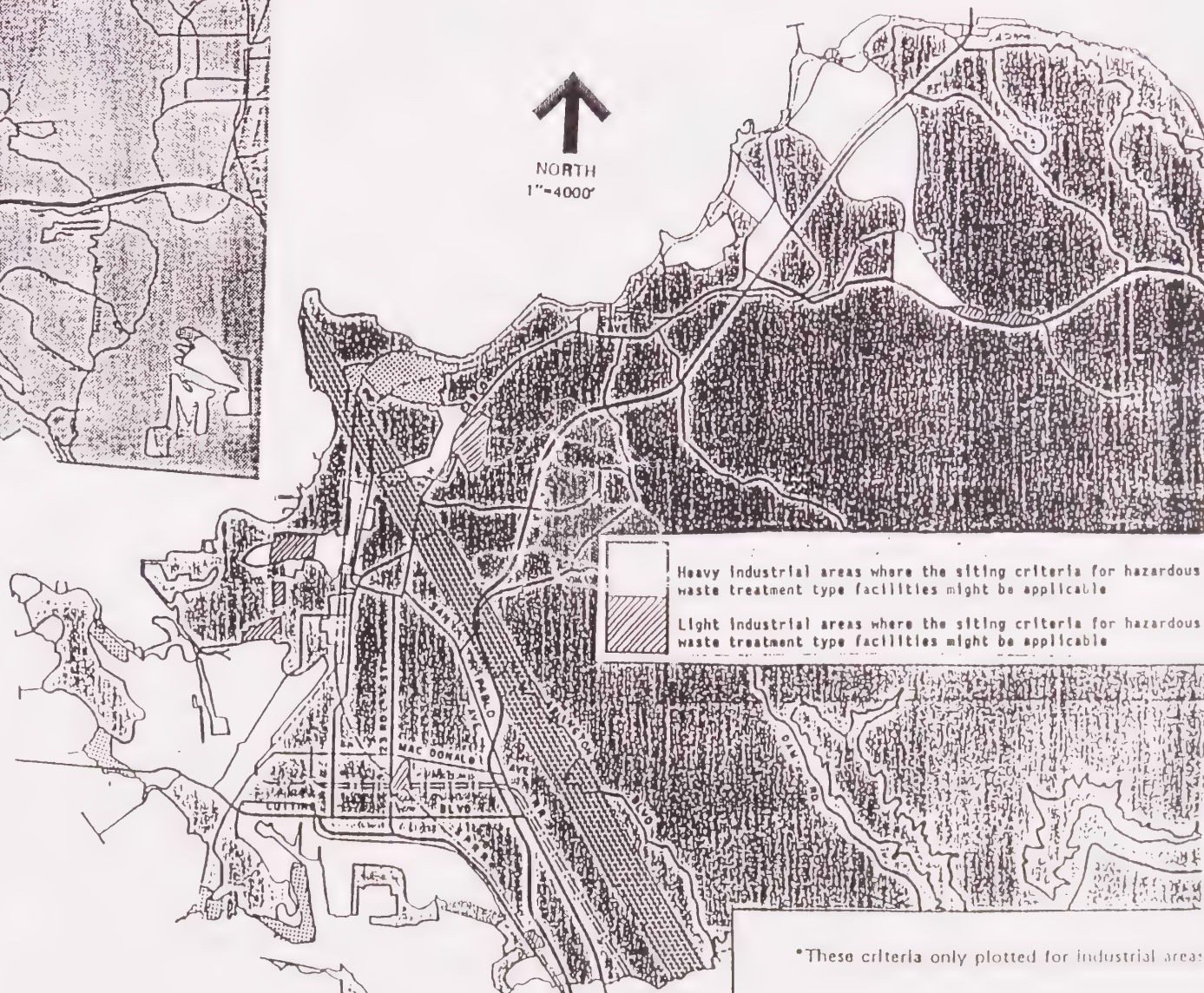
General areas where the siting criteria for Residual Repositories might be applicable

Areas eliminated from consideration due to having one or more of the following characteristics: faults, flood plains, wetlands, military lands, airports, prime agricultural lands, recreational/ cultural/ aesthetic areas, mineral resources, reservoir watersheds and residential use.

Industrial areas excluded from hazardous waste treatment type facility siting by the following criteria:

- Wetlands*
- Prime farmlands*
- Areas of high archeological sensitivity and known sites*
- Non-Industrial designated lands

Alquist - Priolo Special Studies Zone: an active fault (if within 200' of the proposed facility) would preclude the siting.



- Heavy industrial areas where the siting criteria for hazardous waste treatment type facilities might be applicable
- Light industrial areas where the siting criteria for hazardous waste treatment type facilities might be applicable

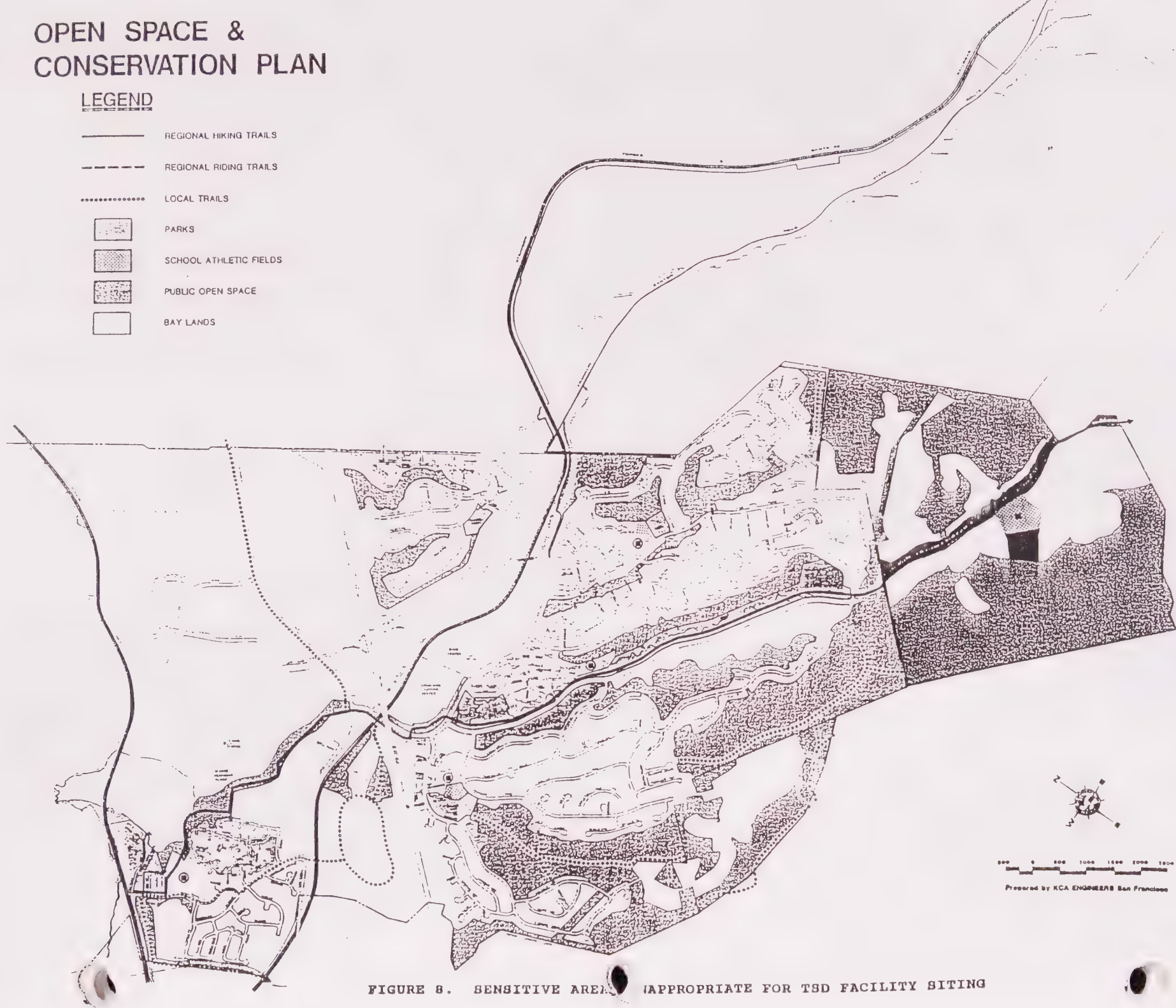
FIGURE 7.
PROJECTED COUNTYWIDE WASTE
GENERATION AND TSD FACILITIES

*These criteria only plotted for industrial areas

OPEN SPACE & CONSERVATION PLAN

LEGEND

- REGIONAL HIKING TRAILS
- - - REGIONAL RIDING TRAILS
- LOCAL TRAILS
-  PARKS
-  SCHOOL ATHLETIC FIELDS
-  PUBLIC OPEN SPACE
-  BAY LANDS



0 500 1000 1500 2000 2500 FEET

Prepared by KCA ENGINEERS San Francisco

FIGURE 8. SENSITIVE AREAS APPROPRIATE FOR TSD FACILITY SITING



LAND USES

LEGEND

RESIDENTIAL

- [L] LOW DENSITY
- [ML] MED LOW DENSITY
- [M] MEDIUM DENSITY
- [MH] MEDIUM HIGH DENSITY
- [H] HIGH DENSITY

PUBLIC

- [CC] CIVIC CENTER
- [HS] HIGH SCHOOL
- [JHS] JUNIOR HIGH
- [E] ELEMENTARY
- [MHP] MULTI-PURPOSE

CIRCULATION

- [FW] FREEWAYS
- [ST] STREETS
- [RL] RAILROADS

PARKS OPEN SPACE

- [CP] COMMUNITY PARK
- [NP] NEIGHBORHOOD PARK
- [WP] WATERBORN PARK
- [OS] OPEN SPACE

COMMERCIAL

- [TC] TOWN CENTER
- [SC] SERVICE
- [HC] HIGHWAY
- [IC] INDUSTRIAL
- [NC] NEIGHBORHOOD

INDUSTRIAL

- [I] INDUSTRIAL

OTHER

- [PS] PASTURE, CATTLE, ETC.

FIGURE 6.
MAJOR LAND USES IN HERCULES



CIRCULATION PLAN

LEGEND



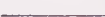





-  FREEWAYS
-  ARTERIALS
-  LOCAL COLLECTOR
-  FREEWAY INTERCHANGE
-  RAILROADS
-  SCENIC ROUTES
-  FUTURE HIGHWAYS
-  GRADE SEPARATION

FIGURE 5.
MAJOR EXISTING TRANSPORTATION CORRIDORS

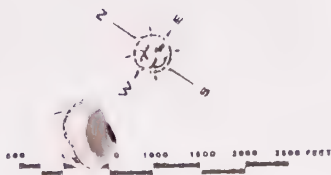


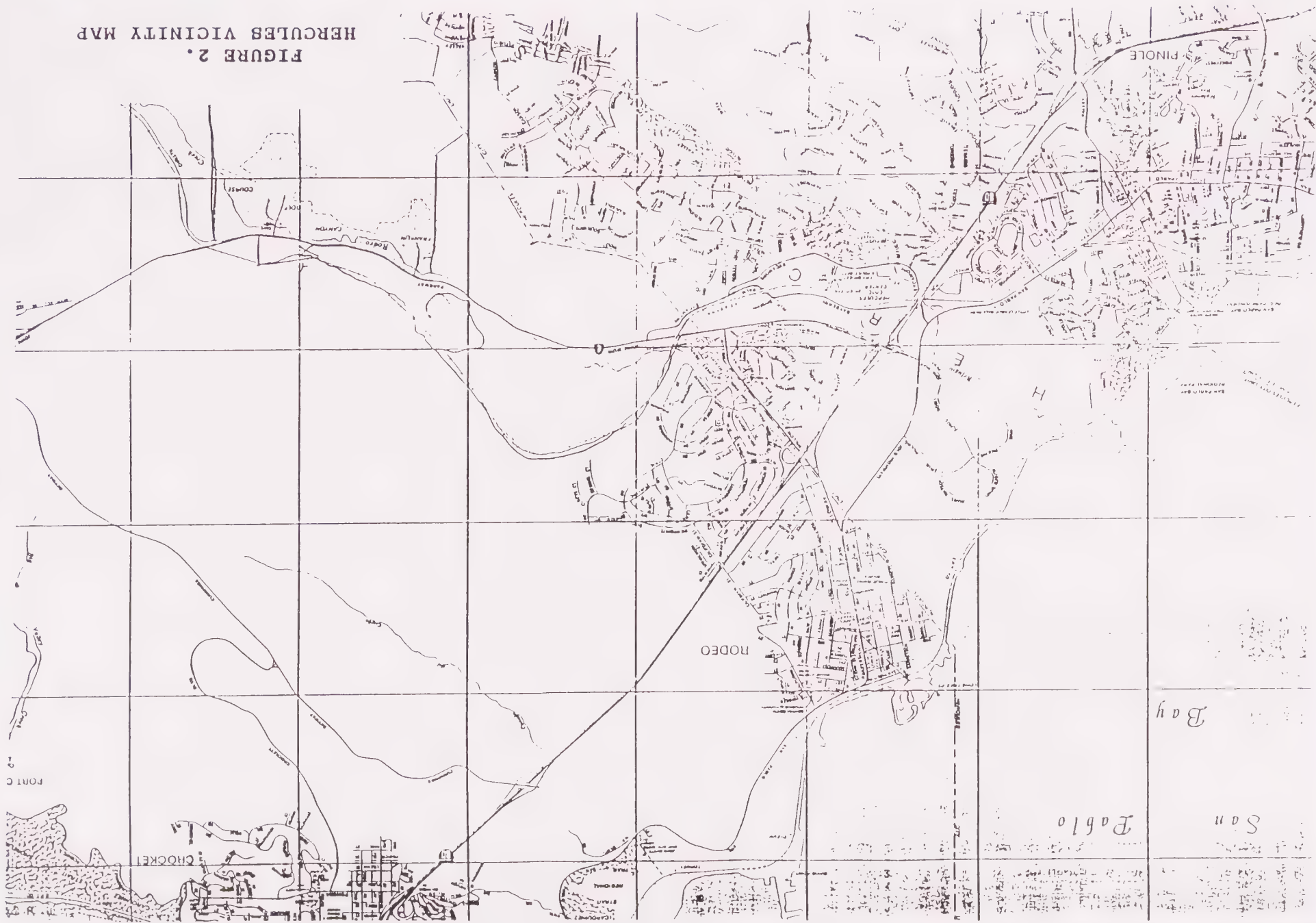


FIGURE 4. MAJOR EXISTING GENERATORS

FIGURE 3.
HERCULES BOUNDARY MAP



FIGURE 2.
HERCULES VICINITY MAP



10-0 TABLES

TABLE 1. QUANTITIES OF MANIFESTED WASTE GENERATED
IN HERCULES AND SHIPPED OFF-SITE

| <u>Facility Name</u> | <u>Waste Generation (Tons)*</u> | |
|------------------------------------|---------------------------------|-------------|
| | <u>1986</u> | <u>1988</u> |
| King Oil Company | 1,646.43 | ND |
| Hercules Little League Field | 1,603.08 | ND |
| Pacific Refining Company | 497.49 | 423.83 |
| Hercules Properties Ltd | ND | 53.92 |
| Mechanics Bank of Richmond-Trustee | ND | 0.08** |
| Caltrans District 4 | ND | 0.88*** |
| Bio-Rad Laboratories | <u>ND</u> | <u>1.12</u> |
| TOTAL | 3,747.00 | 478.83 |

* Note: These figures from DHS Manifest summary data often disagree with Annual Reports submitted to DHS by industries by up to 20%.

**Best estimate from available data.

***These wastes were not shipped off-site but were contained in wastewater discharged to storm drain.

TABLE 2. CURRENT MANIFESTED HAZARDOUS WASTE IMPORTED
AND EXPORTED FROM HERCULES (1988, 1989)

| <u>Generator</u> | <u>Waste Stream</u> | <u>Manifested Waste (tons)</u> | <u>Imp/Exp</u> |
|------------------------------------|----------------------|------------------------------------|----------------|
| Pacific Refining Company (1989) | K-Waste | 155.0 | E |
| | Bio-Sludge | 141.0 | E |
| | Spent Catalyst | 15.0 | E |
| | Asbestos Waste | 27.0 | E |
| Bio-Rad Laboratories (1988) | Halogenated Solvents | 0.22 | E |
| | Unspecified Solvent | | |
| | Mixture | 0.90 | E |

TABLE 3. CURRENT WASTE PRODUCTION FROM SMALL QUANTITY GENERATORS BY WASTE TYPE (1988 Estimated)

| <u>Waste Type</u> | <u>Waste Group</u> | <u>Waste Production</u> <u>(Tons/yr)</u> |
|--|---|---|
| Arsenic Wastes | Metal Containing Liquids | 0.00 |
| Cyanide Wastes | Cyanide & Metal-Containing Liquid | 0.32 |
| Dry Cleaning (Filtration Residue) | Non-Halogenated Organic Sludges & Solids | 17.79 |
| Empty Pesticide Containers | Miscellaneous Wastes | 0.68 |
| Heavy Metal Dust | Miscellaneous Wastes | 0.29 |
| Heavy Metal Solutions | Metal-Containing Liquids | 0.00 |
| Heavy Metal Waste Material | Metal-Containing Liquids | 0.54 |
| Ignitable Paint Wastes | Dyes, Paint Sludges & Resin Wastes | 10.03 |
| Ignitable Wastes | Non-Halogenated Solvents | 14.66 |
| Ink Sludges Containing Chromium or Lead | Metal-Containing Sludges | 0.04 |
| Mercury Wastes | Metal-Containing Liquids | 0.14 |
| Other Reactive Wastes | Non-Metallic Inorganic Liquids | 1.90 |
| Paint Waste Containing Heavy Metals | Metal-Containing Sludges | 0.21 |
| Pesticide Solutions | Pesticides | 1.09 |
| Photographic Wastes | Miscellaneous Wastes | 2.40 |
| Solvent Still Bottoms | Halogenated or Non-Halogenated Sludges & Solids | 0.24 |
| Spent Plating Wastes | Metal Containing Liquids | 0.30 |
| Spent Solvents | Halogenated or Non-Halogenated Solvents | 30.64 |
| Solutions or Sludges Containing Silver | Metal-Containing Liquids & Sludges | 0.00 |
| Strong Acids or Alkalies | Non-Metallic Inorganics Liquids | 11.46 |
| Used Lead-Acid Batteries | Miscellaneous Wastes | 16.95 |
| Waste Formaldehyde | Organic Liquids | 33.23 |
| Waste Inks Containing Flammable Solvents or Heavy Metals | Metal Containing Liquids | 0.38 |
| Waste Pesticides | Pesticides | 3.15 |
| Wastewater Containing Heavy Metal Sludges | Metal Containing Sludges | 0.08 |
| Wastewater Containing Wood Preservatives | PCBs and Dioxins | 0.00 |
| Wastes Containing Ammonia | Non-Metallic Inorganic Wastes | 1.35 |
| Other | Miscellaneous Wastes | 44.88 |
| TOTAL | | 192.75 |

TABLE 4. WASTE OIL GENERATION BY SMALL QUANTITY GENERATORS
IN THE CITY OF HERCULES FOR 1990

| Business Sector | Specific Business Type | 1990 No. of Firms | Waste Oil Generation Factor | | Generated (tons) |
|--|-----------------------------|-------------------|-----------------------------|------------------------|------------------|
| | | | DHS (gal/yr) | Total Amount (tons/yr) | |
| Vehicle Maintenance (Automotive Related) | Recycling Centers | | 3,222 | 12.10 | |
| | Service Stations | | 2,998 | 11.26 | |
| | Repair Shops | | 3,032 | 11.39 | |
| | Auto Dealers | | 2,962 | 11.12 | |
| | Auto Centers | 1 | 3,010 | 11.30 | 11.30 |
| | Fleet Shops | | 3,160 | 11.30 | |
| | Airports | | 2,800 | 10.51 | |
| | | | | Subtotal | 11.30 |
| Industry Related (Manufacturing) | Wood Products | | 2,676 | 10.05 | |
| | Furniture & Fixtures | | 2,365 | 8.88 | |
| | Pulp/Paper | | * | * | |
| | Newspapers | | 2,779 | 10.44 | |
| | Chemicals | | 2,799 | 10.51 | |
| | Rubber/Plastic | 1 | 2,407 | 9.04 | 9.04 |
| | Leather | | * | * | |
| | Glass | | * | * | |
| | Primary Metals | | 2,508 | 11.15 | |
| | Fabricated Metals | | 2,691 | 10.10 | |
| | Machinery | | 2,592 | 9.73 | |
| | Electronics | 1 | 2,655 | 9.97 | 9.97 |
| | Motor Vehicles | 1 | 2,501 | 9.39 | 9.39 |
| | Instruments | 1 | 2,389 | 8.97 | 8.97 |
| | Miscellaneous Manufacturing | | 2,522 | 9.47 | |
| | Electrical Utilities | | 5,319 | | |
| | Commercial Marine Terminals | | * | | |
| | Railroad Yards | | * | | |
| | | | | Subtotal | 37.37 |
| | | | | Estimated Total | 48.67 |

Number of businesses based on Small Business List.

Source: "Determining Used Oil Volumes Generated by Selected Small Quantity Generators", DHS 1987

* DHS did not supply a waste oil generation factor for this industry, and, thus, a quantity cannot be calculated.

TABLE 5. HOUSEHOLD HAZARDOUS WASTE GENERATED IN 1989

| <u>Waste Group</u> | <u>Ton/year</u> | <u>Quantity Percent</u> |
|------------------------------------|-----------------|-----------------------------|
| Oil and Similar Lubricant Products | 9.2 | 46% |
| Paint and Building | 5.8 | 29% |
| Gasoline and Solvents | 4.0 | 20% |
| Other Wastes | <u>1.0</u> | <u>5%</u> |
| Total Household Hazardous Wastes | 20.0 | 100% |

TABLE 6. KNOWN CONTAMINATED SITES WITHIN AND NEAR THE CITY OF HERCULES
DESIGNATED BY THE STATE BOND EXPENDITURE PLAN

| <u>Site Name</u> | <u>Type of Contamination</u> | <u>Cleanup Status*</u> |
|-----------------------------|---|---|
| Hercules Properties Ltd. | Acids, Caustics, Heavy Metals, Asbestos (soil) | Ongoing (Additional Investigations) |
| Hercules, Inc. | Munitions and Explosives (soil) (trinitrotoluene, dinitrotoluene, dinitrobenzene, lead) | Ongoing (Pilot Test in Progress) |
| ASARCO* | Arsenic, Lead, and other Heavy Metals (soil) | Ongoing |
| American Standard Products* | Lead (soil) | Remediation to begin 1990 |
| Cooper Chemical* | Lead, Zinc, Copper (soil) | Ongoing |
| FMC Corporation* | Heavy Metals in Soil; Solvents Organochlorine and organophosphorus Pesticides in Soil & Groundwater | Ongoing |
| Drew Sales* | Copper, Nickel, Lead and Zinc (soil) | Ongoing |

*These sites are not located within the Hercules City Limit, but are within approximately 10 miles of the City.

TABLE 7. PROJECTED QUANTITIES OF HAZARDOUS WASTE GENERATION
IN HERCULES (Year 2000)

| <u>Facility Name</u> | <u>Waste Generation (Tons)*</u> | |
|--------------------------------------|---------------------------------|-------------------|
| | <u>1988</u> | <u>2000</u> |
| Pacific Refining Company | 423.8 | 423.8-847.6 |
| Mechanics Bank of Richmond - Trustee | 0.08 | 0.08-0.16 |
| Caltrans District 4 | 0.88 | 0.88-1.76 |
| Contaminated oil from existing sites | 53.9 | 0.0 |
| Bio-Rad Laboratories | 1.12 | 1.12-2.3* |
| Small Quantity Generators | 192.8 | 150.9-218.4 |
| Waste oil | 48.7 | 55.5 |
| Household Waste | <u>20.0</u> | <u>18.7- 22.6</u> |
| Total | 741.28 | 650.98-1,148.32 |

*This number could be considerably higher if the company's chemical division locates in Hercules.

TABLE 8. ESTIMATE OF HOUSEHOLD AND SQG HAZARDOUS WASTE
IN THE YEAR 2000 (Tons/Year)

| <u>Waste Group</u> | <u>Without Waste Min.</u> | <u>With Waste Min.</u> |
|---|-------------------------------|----------------------------|
| HOUSEHOLD HAZARDOUS WASTE | | |
| Oil and Similar Lubricant Products | 10.5 | 9.6 |
| Paint and Building | 6.6 | 6.2 |
| Gasoline and Solvents | 4.5 | 2.3 |
| Other Wastes | <u>1.1</u> | <u>0.6</u> |
| Total Household Hazardous Waste | 22.7 | 18.7 |
| SMALL QUANTITY GENERATOR HAZARDOUS WASTE | | |
| Arsenic Wastes | 0.00 | 0.00 |
| Cyanide Wastes | 0.36 | 0.03 |
| Dry Cleaning Filtration Residues | 20.28 | 20.08 |
| Empty Pesticide Containers | 0.77 | 0.75 |
| Heavy Metal Dust | 0.33 | 0.25 |
| Heavy Metal Solutions | 0.00 | 0.00 |
| Heavy Metal Waste Materials | 0.62 | 0.46 |
| Ignitable Paint Wastes | 11.43 | 10.86 |
| Ignitable Wastes | 16.71 | 15.21 |
| Ink Sludges Containing Chromium or Lead | 0.05 | 0.04 |
| Mercury Waste | 0.16 | 0.12 |
| Other Reactive Wastes | 2.17 | 2.13 |
| Paint Wastes Containing Heavy Metals | 0.24 | 0.18 |
| Pesticide Solutions | 1.24 | 1.22 |
| Photographic Wastes | 2.74 | 2.07 |
| Solvent Still Bottoms | 0.27 | 0.25 |
| Spent Plating Wastes | 0.34 | 0.25 |
| Spent Solvents | 33.65 | 30.62 |
| Solutions or Sludges Containing Silver | 0.00 | 0.00 |
| Strong Acids or Alkalies | 13.06 | 9.79 |
| Used Lead-Acid Batteries | 19.32 | 14.49 |
| Waste Formaldehyde | 37.88 | 36.36 |
| Waste Inks Containing Flammable Solvents or Heavy Metals | 0.43 | 0.32 |
| Waste Pesticides | 3.59 | 3.52 |
| Wastewater Containing Heavy Metals | 0.09 | 0.07 |
| Wastewater Containing Wood Preservatives | 0.00 | 0.00 |
| Waste Containing Ammonia | 1.54 | 1.51 |
| Other | <u>51.16</u> | <u>50.14</u> |
| Total SQG Hazardous Waste | 218.43 | 200.72 |

The year 2000 Household Hazardous Waste Projection was based on information obtained from the State DOHS; and the ABAG projection (1987).

TABLE 9. PROJECTED QUANTITIES OF CLEANUP WASTES AND NEW WASTE STREAMS

| <u>Facility Name</u> | | <u>Waste Generation (Tons)</u> | |
|--------------------------|-------------------|--------------------------------|-------------|
| | | <u>1988</u> | <u>2000</u> |
| Pacific Refining Company | K-Waste | 155.0 | 155.0-310.0 |
| | Bio-Sludge | 141.0 | 141.0-282.0 |
| | Spent Catalyst | 15.0 | 15.0- 30.0 |
| | Asbestos Waste | 27.0 | < 1.0 |
| | Other Waste | 85.8 | 85.8-171.6 |
| Bio-Rad Laboratories | Solvents | 1.12 | 1.12-2.3 |
| | Other Waste | 0.2 | 0.2-0.4 |
| Contaminated Sites | Contaminated Soil | 53.9 | 0 |

TABLE 10. PROJECTED CITY OF HERCULES NEEDS ASSESSMENT
YEAR 2000 (TONS/YEAR) *

| <u>Waste Type</u> | <u>Projection</u> | <u>Current Capacity</u> |
|---|-------------------|-------------------------|
| Waste Oil | 58.3 | 0.0 |
| Halogenated Solvents & Non-Halogenated Solvents | 33.5 | 0.0 |
| Organic Liquids | 37.5 | 0.0 |
| Pesticides | 4.8 | 0.0 |
| PCB's & Dioxins | 0.0 | 0.0 |
| Oily Sludges & Halogenated Organic Sludges & Solids | 0.3 | 0.0 |
| Dye & Paint Sludges & Resins | 11.3 | 0.0 |
| Metal Containing Liquids | 1.6 | 0.0 |
| Cyanide & Metal Liquids | 0.0 | 0.0 |
| Non-Metallic Inorganic Liquids | 2.1 | 0.0 |
| Metal Containing Sludges | 0.4 | 0.0 |
| Non-Metallic Inorganic Sludges | 44.0 | 0.0 |
| Contaminated Soil | 0.0 | 0.0 |
| Miscellaneous Wastes | <u>74.7</u> | <u>0.0</u> |
| TOTAL | 668.5 | 0.0 |

TABLE 11. METHODS FOR REDUCING EXPOSURE TO HOUSEHOLD TOXICS
(Source: Golden Empire Health Planning Center)

- o Purchase less toxic or non-toxic items whenever possible.
- o Buy only the amount needed to do the job.
- o Give leftover paint (not lead-based) to a neighbor to use.
- o Avoid use of aerosols. They are a high source of indoor air pollution.
- o Recycle motor oil at a participating service station. Call the California Waste Management Board at (800) 925-5545 for locations.
- o Keep products in their original containers.
- o Use products in well-ventilated areas. An open door or window may not be enough.
- o Wear protective clothing.
- o Never mix products unless instructions call for it. Adverse chemical reactions can occur.
- o Use only the recommended amount. "More" is not better.
- o Consider whether the product can be used less frequently.
- o Keep products out of reach of children and pets.
- o Use the free collection program to rid your home of old and unwanted products containing toxic chemicals.

11.0 TECHNICAL APPENDICES

APPENDIX A1—SMALL QUANTITY GENERATOR CALCULATION TABLES

TABLE A-2. SMALL QUANTITY GENERATOR WASTE
PROJECTED YEAR 2000 BY WASTE CATEGORY

| <u>Waste Type</u> | <u>Waste Generation (Tons/Year)</u> | | |
|--|-------------------------------------|-------------|-------------------------------|
| | <u>1990</u> | <u>2000</u> | <u>2000 W/Waste Reduction</u> |
| Arsenic Wastes | 0 | 0 | 0 |
| Cyanide Wastes | 0.32 | 0.36 | 0.35 |
| Dry Cleaning (Filtration Residue) | 17.79 | 20.28 | 20.08 |
| Empty Pesticide Containers | 0.68 | 0.77 | 0.75 |
| Heavy Metal Dust | 0.29 | 0.33 | 0.25 |
| Heavy Metal Solutions | 0 | 0 | 0 |
| Heavy Metal Waste Material | 0.54 | 0.62 | 0.46 |
| Ignitable Paint Wastes | 10.03 | 11.43 | 10.86 |
| Ignitable Wastes | 14.66 | 16.71 | 15.21 |
| Ink Sludges Containing Chromium or Lead | 0.04 | 0.05 | 0.04 |
| Mercury Wastes | 0.14 | 0.16 | 0.12 |
| Other Reactive Wastes | 1.90 | 2.17 | 2.13 |
| Paint Waste Containing Heavy Metals | 0.21 | 0.24 | 0.18 |
| Pesticide Solutions | 1.09 | 1.24 | 1.22 |
| Photographic Wastes | 2.40 | 2.74 | 2.07 |
| Solvent Still Bottoms | 0.24 | 0.27 | 0.25 |
| Spent Plating Wastes | 0.30 | 0.34 | 0.25 |
| Spent Solvents | 29.52 | 33.65 | 30.62 |
| Solutions or Sludges Containing Silver | 0 | 0 | 0 |
| Strong Acids or Alkalies | 11.46 | 13.06 | 9.79 |
| Used Lead-Acid Batteries | 16.95 | 19.32 | 14.49 |
| Waste Formaldehyde | 33.23 | 37.88 | 36.36 |
| Waste Inks Containing Flammable Solvents or Heavy Metals | 0.38 | 0.43 | 0.32 |
| Waste Pesticides | 3.15 | 3.59 | 3.52 |
| Wastewater Containing Heavy Metal Sludges | 0.08 | 0.09 | 0.07 |
| Wastewater Containing Wood Preservatives | 0 | 0 | |
| Wastes Containing Ammonia | 1.35 | 1.54 | 1.51 |
| Other | 44.88 | 51.16 | * |

*Waste reduction factor not available for this waste type.

ARROW DESIGN
C C S
CLASSIC DETAIL
CLUB CONNECTION
D & B INSTALLATIONS
DESIGNER HOMES
DYNAMIK
EARTH MOTHER DESIGNS
EVENT MERCHANDISING
EXCEL DIVERSIFIED SERVICES INC.
HERCULES ENERGY RESEARCH CENTER
HOME SERVICE MECHANIC
J C COMPANY
JIM I. JUACHON
KING OIL
LIU'S INVESTMENT CO.
MAGNA MATER ENTERPRISES
MARJORIE VINES
MCCALL & ASSOCIATES
MICHAEL OVERALL PAINTING
MUSIC RESEARCH INSTITUTE
NGUYEN ASSOCIATES
NLI
PACIFIC ENTERPRISES
PETALS
PRETTY THINGS
RAINBOW TRADING CO.
RAM SOFTWARE
RBI MANAGEMENT INC.
RJC INTERNATIONAL SERVICES
RULE TRUCKING
SEEKO ASSOCIATES
SUN VALLEY TRADING COMPANY
TELCO ENTERPRISES
THAGARD RESEARCH CORPORATION
THE BRASS EXECUTIVE
TOUCAN SERVICES
VISUAL MODE LTD.

[illegible]

| | | | |
|-------------------------|--------------------|----------|-----------|
| WILLIAMS SPORTING GOODS | 169 VIOLET ROAD | HERCULES | 5000.5200 |
| WONG'S TRADING CO. | 124 MARIGOLD DRIVE | HERCULES | 5000.5200 |
| ZOILLO S. GABRIEL | 115 OLIVE COURT | HERCULES | 5000.5200 |

A 24 Miscellaneous

| | | | |
|------------------------------------|---------------------------|----------|-------|
| CHESS CAFE | 1511-M SYCAMORE AVENUE | HERCULES | Misc. |
| EMANATIONS INTERIOR DECORATING | 803-3 ORION DRIVE | HERCULES | Misc. |
| STATON PRODUCTIONS | 406-7 OLYMPUS | HERCULES | Misc. |
| LOAD'S ICE CREAM & CANDIES INC. | 1511 M SYCAMORE | HERCULES | Misc. |
| LUCKY STORE #52 | 1551 SYCAMORE AVENUE | HERCULES | Misc. |
| LULU'S FOODS & PASTRIES | 32 GLENWOOD | HERCULES | Misc. |
| M & B PASTRIESZ | 163 FINCH | HERCULES | Misc. |
| WILLOW GLEN APARTMENTS | 1231 WILLOW AVENUE | HERCULES | Misc. |
| WILSON MAIL ORDER | 215-6 APOLLO | HERCULES | Misc. |
| AGILE | 825 ALFRED NOBEL SUTTE A | HERCULES | Misc. |
| BURGERAMA | 1581 SYCAMORE AVE. #8 | HERCULES | Misc. |
| CAFE NOBEL | 825 ALFRED NOBEL DRIVE | HERCULES | Misc. |
| HERCULES ROUND TABLE PIZZA | 1511-D SYCAMORE AVENUE | HERCULES | Misc. |
| SWEET SATISFACTION BAKERY | 1611-D SYCAMORE AVENUE | HERCULES | Misc. |
| VALLEY ICE CREAM & DELI | 1500 SYCAMORE PL. STE B-5 | HERCULES | Misc. |
| HEALTHCARE PROVIDERS REGISTRY | 115 FIR COURT | HERCULES | Misc. |
| HERCULES BEAUTY ACADEMY | 1500 SYCAMORE PL. STE 2-B | HERCULES | Misc. |
| BARBARA'S APPAREL ODYSSEY | 187 COLUMBINE PLACE | HERCULES | Misc. |
| BASKET CASES | 102 WHALER CIRCLE | HERCULES | Misc. |
| BIO RAD HAVA SNAK | 1000 ALFRED NOBEL DRIVE | HERCULES | Misc. |
| COLLIN'S FOOD ETC. | 844 WILLOW AVE. SUITE A-1 | HERCULES | Misc. |
| DEE'S | 103 BUCKLEY | HERCULES | Misc. |
| DRAGON TERRACE | 1581 SYCAMORE AVENUE #1 | HERCULES | Misc. |
| EAST BAY PATROL | P.O. BOX 5162 | HERCULES | Misc. |
| EBONE DESIGNER CHILDREN WEAR | 181 DECATUR COURT | HERCULES | Misc. |
| FAMILY HAIR CUTTERY | 1511 SYCAMORE AVE STE L | HERCULES | Misc. |
| FRANCES FOOD SERVICES (FFS) | 118 LOCUST COURT | HERCULES | Misc. |
| HARWOOD PRODUCTIONS | 2175 REDWOOD ROAD | HERCULES | Misc. |
| JAMMALLOW'S PIZZA & PASTA | 844 WILLOW AVENUE A-11 | HERCULES | Misc. |
| MRS. G'S DONUTS | 844 WILLOW AVENUE A-10 | HERCULES | Misc. |
| SARA'S BAKERY | 157 MARIGOLD DRIVE | HERCULES | Misc. |
| SHEILA M PETRAKIS | 1012 CHELSEA | HERCULES | Misc. |
| SUNFLOWER BAKERY | 1500 SYCAMORE AVE STE B-3 | HERCULES | Misc. |
| THE BIG PICTURE | 166 COLUMBINE PLACE | HERCULES | Misc. |
| THE CAKE PAN | 183 SEQUOIA ROAD | HERCULES | Misc. |
| THRIFTY DRUG & DISCOUNT STORE #686 | 1621 SYCAMORE AVENUE | HERCULES | Misc. |
| VERY BERRY YOGURT | 1522 SYCAMORE, STE. F | HERCULES | Misc. |

| | | | |
|-------------------------------------|---------------------------|----------|------------|
| SOCIALLY YOURS | 148 HALSEY COURT | HERCULES | 5000.5200 |
| A & J TRADING | 218 CORONADO STREET | HERCULES | 5000.5200 |
| ALL THAT GLITTERS | 223 APOLLO #2 | HERCULES | 5000.5200 |
| AMEREX INSTRUMENTS INC. | 175 VIOLET ROAD | HERCULES | 5000.5200 |
| ASIAN FOOD MART-CREEKSIDE SPNG CTR | 1511-K SYCAMORE | HERCULES | 5000.5200 |
| AUSPEX INTERNATIONAL INC. | 1500 SYCAMORE AVE STE B-8 | HERCULES | 5000.5200 |
| AVON SALES-BEVERLY A GEISLER | P.O. BOX 5236 | HERCULES | 5000.5200 |
| BEAUTY CUT (B.U.T. CUT) | 844 WILLOW AVENUE #A7 | HERCULES | 5000.5200 |
| BEAUTY MASTERS INC. | 1500 SYCAMORE PL STE B-2 | HERCULES | 5000.5200 |
| BILLS BASKETS & COLLECTIBLES | 292 VIOLET ROAD | HERCULES | 5000.5200 |
| CHUKU IMPORTS & EXPORTS | 4 MANCHESTER | HERCULES | 5000.5200 |
| CLARA'S CHINA PAINTING | 271 SPARROW | HERCULES | 5000.5200 |
| CLASSIC INTERIOR DESIGN | 118 CATALPA COURT | HERCULES | 5000.5200 |
| COTTONTALES | 1581 SYCAMORE AVE. STE 10 | HERCULES | 5000.5200 |
| DBA: ORIENTAL FOOD CENTER | 1500 SYCAMORE AVENUE | HERCULES | 5000.5200 |
| DEAN DOLAN/SELLING FLOWERS | 145 BEECHNUT | HERCULES | 5000.5200 |
| DEE'S TRAVILIN BOUTIQUE | 55 CRYSTAL CIRCLE | HERCULES | 5000.5200 |
| DIAMOND FIL - AM VIDEO | 1581 SYCAMORE AVE #9a -2 | HERCULES | 5000.5200 |
| DYNAMIC SOUND AND LIGHTING CO. | 448 SPARROW DRIVE | HERCULES | 5000.5200 |
| ELITE FINE ART | 308 WEYMOUTH | HERCULES | 5000.5200 |
| FAIRMONT FABRICS | 115 JARVIS LANE | HERCULES | 5000.5200 |
| FAST DRAW TOOL COMPANY | 402-4 OLYMPUS | HERCULES | 5000.5200 |
| FLORAL ELEGANCE BY MELVENA | 157 SHEPARD STREET | HERCULES | 5000.5200 |
| GOLDEN PACIFIC TIME CO., INC. | P.O. BOX 5310 | HERCULES | 5000.5200 |
| HAPPY ELF'S BOUTIQUE | 268 STARLING WAY | HERCULES | 5000.5200 |
| HERCULES FLORIST & GIFTS | 1511 SYCAMORE AVENUE | HERCULES | 5000.52000 |
| HERCULES POOL AND SPA | 1263 CANTERBURY | HERCULES | 5000.52000 |
| INTERNATIONAL HOUSE OF GIFTS | 2192 LUPINE DRIVE | HERCULES | 5000.5200 |
| JEWEL TECH CORPORATION | 1288 HERCULES AVENUE | HERCULES | 5000.5200 |
| LA BUOUX | 1266 CANTERBURY STREET | HERCULES | 5000.5200 |
| LANETTE'S XMAS BOUTIQUE | 1858 PHEASANT DRIVE | HERCULES | 5000.5200 |
| LENCHO'S GIFT PRODUCTS | 154 ORCHID COURT | HERCULES | 5000.5200 |
| LITO & ESTRELLA BATERINA FURNITURE | 2244 PHEASANT DRIVE | HERCULES | 5000.5200 |
| MAGIC MOVIES OF HERCULES | 1511 SYCAMORE ST. STE J | HERCULES | 5000.5200 |
| MEANINGFUL MOMENTS | 118 SHEPARD STREET | HERCULES | 5000.5200 |
| MOBI DESIGNS | 711 DEVONWOOD | HERCULES | 5000.5200 |
| NONIA'S GIFT BASKETS | P.O. BOX 5023 | HERCULES | 5000.5200 |
| POWER QUALITY RECORDS | 601 WINDSOR STREET | HERCULES | 5000.5200 |
| R & R INTERNATIONAL TRADING | 2193 REDWOOD ROAD | HERCULES | 5000.5200 |
| R B GENERAL MERCHANDISING | 367 VIOLET ROAD | HERCULES | 5000.5200 |
| RALEY'S #342 | 1590 SYCAMORE AVENUE | HERCULES | 5000.5200 |
| ROSES ARE GIFTS | 523 VALLEY RUN | HERCULES | 5000.5200 |
| SIERRA PACIFIC SPACESAVER, INC. | 875 ALFRED NOBEL DR STE J | HERCULES | 5000.5200 |
| STALLION ENTERPRISES | 142 GLENWOOD | HERCULES | 5000.5200 |
| STYLISTIC BEAUTY SUPPLY | 1611-E SYCAMORE | HERCULES | 5000.5200 |
| SUNRISE CLOTHING OUTLET | 1819 PHEASANT DRIVE | HERCULES | 5000.5200 |
| SUNSHINE JEWELRY | 277 SPARROW DRIVE | HERCULES | 5000.5200 |
| T & S GIFTS | 1559 PARTRIDGE DRIVE | HERCULES | 5000.5200 |
| VICTORIOUS PROMOTIONS INTERNATIONAL | 1500 SYCAMORE AVE STE B-4 | HERCULES | 5000.5200 |
| VIDEO SCENE | 1500 SYCAMORE AVENUE | HERCULES | 5000.5200 |
| VIDEO SCENE OF HERCULES | 1500 SYCAMORE AVE. #A-1 | HERCULES | 5000.5200 |
| VIDEOS 2 U | 844 WILLOW AVE. A-6 | HERCULES | 5000.5200 |

| | | | |
|-------------------------------------|---------------------|----------|-----------|
| RICHARD MACCARTER CONSTRUCTION | 151 ORIOLE COURT | HERCULES | 1500,1700 |
| SUPERIOR PAINTING | 355 NEWBURY CT. | HERCULES | 1500,1700 |
| TRUMP'S HOME MAINTENANCE | 1907 REDWOOD ROAD | HERCULES | 1500,1 |
| V. G. ENTERPRISES | 121 CARDINAL WAY | HERCULES | 1500,1 |
| VERNON LEE LANDSCAPE MAINT. SERVICE | 175 MANZANITA PLACE | HERCULES | 1500,1700 |
| W. LEE PROPERTY MAINTENANCE | 1846 PHEASANT DRIVE | HERCULES | 1500,1700 |
| GARY L COMPTON | 127 FARRAGUT STREET | HERCULES | 1800,1700 |

14 Motor Freight

| | | | |
|---------------------------|-----------------|----------|------|
| WEST COAST CABLE SERVICES | 121 DAISY COURT | HERCULES | 4900 |
|---------------------------|-----------------|----------|------|

15 Furniture/Wood Manufacturing and Refinishing

16 Heavy Metal Users

17 Printing/Ceramics

| | | | |
|-------------------------------|-------------|----------|-----------|
| COMPUTER GRAPHICS TYPESETTING | 31 GLENWOOD | HERCULES | 2600,2700 |
|-------------------------------|-------------|----------|-----------|

18 Cleaning Agents/Domestic Manufacturing

19 Other Manufacturing

20 Paper Industry

21 Analytical and Clinical Laboratories

| | | | |
|-------------------------------------|---------------------------|----------|------|
| AUNG COMPUGRAPHICS & ILLUSTRATIONS | 299 STARLING WAY | HERCULES | |
| MINDY FAWN NIUALIKU DESIGNS | 2050'NEIL CIRCLE | HERCULES | |
| NEW FRONTIERS | 133 STARLING WAY | HERCULES | |
| RUSH GRAPHICS | 1265 HERCULES AVENUE | HERCULES | |
| CAMI GRAPHICS | 289 VIOLET ROAD | HERCULES | |
| CAROLYN COSTALES M.S. | 157 NEWBURY | HERCULES | 8000 |
| CREEKSIDE FAMILY DENTISTRY | 1511 SYCAMORE AVE. STE A | HERCULES | 8000 |
| DIAGNOSTIC DIRECTIONS | 125 WORTHING | HERCULES | 8000 |
| DRS. FRANK & KATRINA ZISMAN, OPTOME | 1500 SYCAMORE AVE. STE B1 | HERCULES | 8000 |
| HEALTH SERVICE SPECIALIST | P.O. BOX 5201 | HERCULES | 8000 |
| HERCULES CHRIOPRACTIC CENTER | 1581 SYCAMORE AVE STE #4 | HERCULES | 8000 |
| HERCULES INTERNAL MEDL ASSOC. | 1581 SYCAMORE AVE. #6 | HERCULES | 8000 |
| HERCULES MEDICAL GROUP | 1500 SYCAMORE PLACE STE A | HERCULES | 8000 |
| HERCULES PET CLINIC | 1511 SYCAMORE AVE. STE B | HERCULES | 8000 |
| JOHN B WAYLAND-D.D.S. | 1500 SYCAMORE AVE STE. B7 | HERCULES | 8000 |
| ORAL DENTAL CRAFT STUDIO | P.O. BOX 5460 | HERCULES | 8000 |
| TIN PO HO | 228 APPOLLO #7 | HERCULES | 8000 |

22 Educational and Vocational Shops

| | | | |
|------------------------|----------------|----------|--|
| C & D EQUIPMENT RENTAL | 1280 SANTA FEE | HERCULES | |
|------------------------|----------------|----------|--|

| | | | |
|---------------------------------|---------------------------|----------|------|
| RED CARPET ELITE REALTY | 1521 SYCAMORE AVE. STE 5 | HERCULES | 7300 |
| S & D CONSULTING | 349 NEWBURY | HERCULES | 7300 |
| S & K ASSOCIATES | 560 RAILROAD AVENUE | HERCULES | 7300 |
| SWANHILL PROPERTIES | 825 ALFRED NOBEL DR STE B | HERCULES | 7300 |
| SYNERGISTIC CONSULTING | 560 RAILROAD AVE. #7 | HERCULES | 7300 |
| THE COMPLETE SOLUTION | 175 OXFORD | HERCULES | 7300 |
| TRUC M. MNGUYEN DAND. ARCHITECT | 133 LOCUST COURT | HERCULES | 7300 |
| UNITED CONSULTANT | P.O. BOX 5562 | HERCULES | 7300 |
| VISUAL OPTIONS | 112 THISTLE COURT | HERCULES | 7300 |

8 Photography

9 Textile Manufacturing

10 Vehicle Maintenance

11 Equipment Repair

| | | | |
|--------------------------------|---------------------|----------|----------------|
| ALFRED CONHAGEN INC. OF CA. | 444 RAILROAD AVENUE | HERCULES | 4600,4800,7600 |
| B V I | 241 IRIS ROAD | HERCULES | 4600,4800,7600 |
| CONTAINER LAND | 521 TURQUOISE DRIVE | HERCULES | 4600,4800,7600 |
| LEE ELECTRONICS | 112 MAPLE COURT | HERCULES | 4600,4800,7600 |
| NOVA COMMUNICATIONS | 130 CARDINAL STREET | HERCULES | 4600,4800,7600 |
| ARMADILLO ENTERPRISES | 777 RAILROAD AVE. | HERCULES | 7500 |
| PRIORITY TIRES INC. | P.O. BOX 5321 | HERCULES | 7500 |
| PROFESSIONAL LIFTRUCK SERVICES | 112 MESQUITE COURT | HERCULES | 7500 |

12 Metal Manufacturing

| | | | |
|--------------------|-------------------|----------|-----------|
| PRECISION PRODUCTS | 666 RAILROAD AVE. | HERCULES | 3300,3400 |
|--------------------|-------------------|----------|-----------|

13 Construction

| | | | |
|-------------------------------------|----------------------|----------|-----------|
| ALMOST AMISH | 157 EAGLE COURT | HERCULES | 1500,1700 |
| AR LAND MAINTENANCE | 523 VALLEY RUN | HERCULES | 1500,1700 |
| B F MAINTENANCE & GENERAL SERVICES | P.O. BOX 5032 | HERCULES | 1500,1700 |
| BLAIR & SONS | P.O. BOX 5579 | HERCULES | 1500/1700 |
| BRIGGS & BRIGGS CONSTRUCTION | 100 ROSTI COURT | HERCULES | 1500,1700 |
| CARPETS CARPETS CARPETS | 1681 PARTRIDGE | HERCULES | 1500,1700 |
| DAVES ELECTRIC CONSTRUCTION | P.O. BOX 5604 | HERCULES | 1500,1700 |
| EAGLE HOME MAINTENANCE SERVICE | 1693 PARTRIDGE DRIVE | HERCULES | 1500,1700 |
| EMERALD LANDSCAPE AND IRRIGATION | 382 NO. WILDWOOD | HERCULES | 1500,1700 |
| EZ HOME COMMERCIAL REPAIR & MAINTEN | 130 ASH COURT | HERCULES | 1500,1700 |
| HOME IMPROVEMENT SERVICES | 212 SUNFLOWER COURT | HERCULES | 1500,1700 |
| J. F. DAYCO INTERNATIONAL INC. | 109 ZIRCON COURT | HERCULES | 1500,1700 |
| JENSEN PAINTING | 826 VALLEY RUN | HERCULES | 1500,1700 |
| JOHN DE CACCIA-CONCRETE CONTRACTOR | 106 BELLFLOWER COURT | HERCULES | 1500,1700 |
| LIL'BUDS PLUMBING | 160 VIOLET ROAD | HERCULES | 1500,1700 |
| OASIS HOMES CONSTRUCTION | 212 ORIOLE COURT | HERCULES | 1500,1700 |
| PANOPLY ENTERPRISES | 166 STARLING WAY | HERCULES | 1500,1700 |
| R & T MASONARY | 118 STANLEY COURT | HERCULES | 1500,1700 |
| RAYMOND'S ENTERPRISES | 2253 REDWOOD ROAD | HERCULES | 1500,1700 |

| | | | |
|---------------------------------|-----------------------|----------|------|
| ROY'S WINDOW CLEANING | 145 DUNHAM | HERCULES | 7200 |
| SEW PERSONALIZED | 142 LAPIS | HERCULES | 7200 |
| SIGNE-PSYCHIC PALM READER | 184 NEWBURY | HERCULES | 7200 |
| SPECIAL OCCASIONS SERVICES | 445 SPARROW DRIVE | HERCULES | 7200 |
| ST. DYMHPNA REST HOME | 1640 PARTRIDGE DRIVE | HERCULES | 7200 |
| TANNING ATTRACTION | 1581 SYCAMORE SUITE 9 | HERCULES | 7200 |
| UNIVERSAL PAINTING & DECORATING | 1783 PHEASANT DRIVE | HERCULES | 7200 |
| WILLOW CLEANERS | 844 WILLOW AVENUE AS | HERCULES | 7200 |
| WITH YOU IN MIND | #19 SAPPHIRE COURT | HERCULES | 7200 |

7 Other Personal and Business Services

| | | | |
|--------------------------------------|---------------------------|----------|------|
| A & M PROPERTY MANAGEMENT | P.O. BOX 5207 | HERCULES | 7300 |
| A CONSUMING PASSION | 127 BAY ST. | HERCULES | 7300 |
| ACCOUNTANT ON WHEELS | 310 FALCON WAY | HERCULES | 7300 |
| ADVANCED BUSINESS SERVICES | 2250 REDWOOD ROAD | HERCULES | 7300 |
| ALBEDA MARKETING | 211 MEADOWLARK WAY | HERCULES | 7300 |
| ALCIBLADES F. ABAD C.P.A. | 1500 SYCAMORE AVE STE B10 | HERCULES | 7300 |
| ALLWASTE SERVICES OF S.F. INC. | 560 RAILROAD AVENUE | HERCULES | 7300 |
| AQUILA TRAVEL SVC. INC. | 1511 SYCAMORE AVE. STE E | HERCULES | 7300 |
| ASSO/COMMUNITY CHANGE & DEVELOPMENT | 178 BOBOLINK WAY | HERCULES | 7300 |
| B & J TECHNICAL CONSULTING | 109 COLUMBINE | HERCULES | 7300 |
| BENSAN'S INSURANCE SERVICES | 1500 SYCAMORE AVE STE B-8 | HERCULES | 7300 |
| BETTER HOMES REALTY | 1511 SYCAMORE #C | HERCULES | 7300 |
| BISHOP ROSE COMPANY | 66 GLENWOOD | HERCULES | 7300 |
| BOOKKEEPING WORKS | 509 TURQUOISE DRIVE | HERCULES | 7300 |
| BROWNLOW & BROWNLOW MANAGEMENT SERV. | 100 SPARROW DRIVE | HERCULES | 7300 |
| CANCO TELECOMMUNICATION SERVICES | 358 NEWBURY STREET | HERCULES | 7300 |
| CANDICE J. SALAZAR C.P.A. | 142 BERYL COURT | HERCULES | 7300 |
| CENTURY 21 GREENHILLS REALTY | 1500 SYCAMORE AVE STE B10 | HERCULES | 7300 |
| CINDY'S INTERNATIONAL TRADERS | 1500 SYCAMORE PLACE B-9 | HERCULES | 7300 |
| CRISANTO G. ANTONIO | P.O. BOX 5662 | HERCULES | 7300 |
| CUSTOM SIGN COMPANY | 361 LILAC CIRCLE | HERCULES | 7300 |
| DE GRACIA REALTY | 100 FINCH COURT | HERCULES | 7300 |
| EQUITY ASSOCIATES | 169 OXFORD STREET | HERCULES | 7300 |
| FIRMAC INC. | 1500 SYCAMORE PLACE B-8 | HERCULES | 7300 |
| GAFNER & ASSOCIATES | 130 MANZANITA PLACE | HERCULES | 7300 |
| GUERRERO INSURANCE AGENCY | 844 WILLOW AVENUE A-9 | HERCULES | 7300 |
| HERCULES PROPERTIES INC. | 560 RAILROAD AVENUE | HERCULES | 7300 |
| HERITAGE FINANCIAL MANAGEMENT | 118 AMETHYST COURT | HERCULES | 7300 |
| HIBERNIA INSURANCE SERVICES, INC. | 825 ALFRED NOBEL DR STE 0 | HERCULES | 7300 |
| HIGHLAND TRADING COMPANY | 118 DOGWOOD COURT | HERCULES | 7300 |
| INFORM PUBLIC RELATIONS | 560 RAILROAD AVE STE 204 | HERCULES | 7300 |
| JOHN & JANIS PROPERTY MANAGEMENT | 256 SPARROW DRIVE | HERCULES | 7300 |
| JON LEE BERG CO. | 508 FALCON WAY | HERCULES | 7300 |
| KENNETH C. HILL ASSOCIATES | 1687 PHEASANT DRIVE | HERCULES | 7300 |
| MARTECH INTERNATIONAL INC. | 725-B ALFRED NOBEL DRIVE | HERCULES | 7300 |
| MICROPLUS DATA SYSTEMS | 106 JARVIS LANE | HERCULES | 7300 |
| MIKE MOJABI, ACCOUNTANT | P.O. BOX 5141 | HERCULES | 7300 |
| NUTRI SYSTEM | 1611-G SYCAMORE AVENUE | HERCULES | 7300 |
| PATTY MURPHY BOOKKEEPING & TAX | 2310 REDWOOD ROAD | HERCULES | 7300 |
| PRIOLEAU DISTRIBUTORS | 130 COVENTRY | HERCULES | 7300 |
| PTI COMPUTER CONSULTING | 599 TURQUOISE DRIVE | HERCULES | 7300 |
| R M T MARKETING GROUP | 200 ORIOLE COURT | HERCULES | 7300 |
| RALEY'S TRAVEL CENTER | 1592 SYCAMORE AVENUE | HERCULES | 7300 |

TABLE A-1

INDUSTRIAL GROUPS POTENTIALLY CONTAINING
SMALL QUANTITY GENERATORS

| Group No. | Industrial Group | | | |
|-----------|-------------------------------------|-------------------------|----------|-----------|
| 1 | Pesticide End Users | | | |
| 2 | Pesticide Application Services | | | |
| | COMMUNITY PROJECTS | P.O. BOX 5701 | HERCULES | 100 |
| | PRO MED, INC. | 15 MOONSTONE COURT | HERCULES | 100 |
| 3 | Chemical Manufacturing | | | |
| | BIO-RAD LABORATORIES, INC. | 1000 ALFRED NOBEL DRIVE | HERCULES | 2800.8200 |
| | BIOVATION INC. | 875 ALFRED NOBEL DRIVE | HERCULES | 2800.8200 |
| | IMMAGEWORKS | 1611-F SYCAMORE | HERCULES | 2800 |
| 4 | Wood Processing | | | |
| 5 | Formulators | | | |
| 6 | Laundries | | | |
| | A & A 24 HR. JANITORIAL SERVICE | 244 STARLING WAY | HERCULES | 7200 |
| | ARTISTRY IN CAKES AND FLOWERS | 220 O'NEIL CIRCLE | HERCULES | 7200 |
| | CREEKSIDE DRYCLEANERS | 1511 SYCAMORE AVE. #g | HERCULES | 7200 |
| | ECON JANITORIAL SERVICES | 139 CINNABAR WAY | HERCULES | 7200 |
| | GEORGIO'S CUSTOM DRAPERY SERVICE | 157 OXFORD STREET | HERCULES | 7200 |
| | GOTCHA COVERED WINDOW FASHIONS | 112 IRIS CT. | HERCULES | 7200 |
| | HERCULES BUILDING MAINT JANIT. SRV. | 38 CRYSTAL CIRCLE | HERCULES | 7200 |
| | HERCULES JANITORIAL SERVICES | 1640 PARTRIDGE DRIVE | HERCULES | 7200 |
| | IDA F LIPSCOMB | 1011 CHELSEA | HERCULES | 7200 |
| | IMRIE INVESTIGATIONS | P.O. BOX 5394 | HERCULES | 7200 |
| | INTERIOR ACCENTS UNLIMITED | 106 BOBOLINK WAY | HERCULES | 7200 |
| | INTERIOR DECORATOR L. VANNIEUWBURG | 910 DOVER | HERCULES | 7200 |
| | LAD TRANSCRIPTION SERVICE | 529 VALLEY RUN | HERCULES | 7200 |
| | LADAN MAJABI HARAZ CHILD CARE | 106 STARLING | HERCULES | 7200 |
| | LITTLE CHIPS DAY CARE | 331 NEWBURY | HERCULES | 7200 |
| | LITTLE TIKI STATION | 2165 LUPINE | HERCULES | 7200 |
| | LOOK CARPET CLEANERS | 1575 SWALLOW WAY | HERCULES | 7200 |
| | LOU'S SHINE-A-BLIND | P.O. BOX 5088 | HERCULES | 7200 |
| | LYN'S CARPET CLEANING | 121 CARDINAL WAY | HERCULES | 7200 |
| | MR. NEIGHBOR'S HOME & PET SITTEES | 1263 CANTERBURY | HERCULES | 7200 |
| | PAC DATA TEMPORARY SERVICES | 1133 WILLIAMS | HERCULES | 7200 |
| | PENNY RAMMER INTERIOR DESIGN CONSU | 118 AMETHYST COURT | HERCULES | 7200 |
| | PILLOW PRE-SCHOOL | 1702 PHEASANT DRIVE | HERCULES | 7200 |
| | PROF. TRANSCRIPTION ASSOC. | P.O. BOX 5335 | HERCULES | 7200 |

ASSIGNED INDUSTRIAL GROUPS POTENTIALLY CONTAINING SMALL QUANTITY GENERATORS

| Group No. | Industrial Group | Assigned SIC's |
|-----------|--------------------------------------|------------------------------|
| 1 | Agriculture | 100 |
| 2 | Building & Construction Firms | 1500, 1700 |
| 3 | Vehicle Maintenance Shops | 1600 |
| 4 | Lumber & Wood Products | 2400 |
| 5 | Printers (typesetting) | 2600, 2700 |
| 6 | Chemical Products | 2800 |
| 7 | Petroleum Products | 2900 |
| 8 | Metal Manufacturers | 3300, 3400, 3500, 3600, 3800 |
| 9 | Transportation Equipment | 3700, 4200, 4700 |
| 10 | Utility Companies | 4900 |
| 11 | Railroad Facilities | 4000 |
| 12 | Gasoline Service Stations | 5100, 5500 |
| 13 | Personal Businesses (laundromats) | 7200 |
| 14 | Wholesale & Retail Sales | 5000, 5200 |
| 15 | Analytical & Clinical Labs | 8200 |
| 16 | Health Services | 8000 |
| 17 | Businesses (General office/consult.) | 7300 |
| 18 | Automotive Repair Services & Garages | 7500 |
| 19 | Miscellaneous Repair Services | 4600, 4800, 7600 |
| 20 | Other Businesses | Miscellaneous |
| 21 | Graphics, Sign Co.s, Graphic Designs | |
| 22 | Equipment Rental | |

Source: National Small Quantity Hazardous Waste Survey, U.S. EPA, February 1985.
 Contra Costa County Hazardous Waste Management Plan, June 1989.
 Solano County Hazardous Waste Management Plan, August 1989.
 City of Martinez Draft Hazardous Waste Management Plan, March 1990.

TABLE A-3

SQG INDUSTRY GROUP AND WASTE GENERATION INFORMATION

| Industry Groups | Total No. of Companies in the City of Hercules | Waste Generation (MT/YR) | Assigned SIC Code Group | Types of Wastes Produced | % of Total Volume | Volume of Waste by each Waste Type (MT/YR) |
|--------------------------------|---|-----------------------------|-------------------------------|---|--|---|
| Pesticide End Users | 0 | 0 | | 1) Empty Pesticide Containers 2) Pesticide Solutions 3) Waste Pesticides 4) Other | 1) 25 2) 69 3) 46 4) 1 | 1) 0 2) 0 3) 0 4) 0 |
| Pesticide Application Services | 2 | 1.8 | 100 | 1) Empty Pesticide Containers 2) Pesticide Solutions 3) Waste Pesticides 4) Other | 1) 34.8 2) 55 3) 9.6 4) 1 | 1) 0.62 2) 0.99 3) 0.17 4) 0.02 |
| Chemical Manufacturing | 3 | 9.6 | 2800, 8200 | 1) Cyanide Wastes 2) Heavy Metal Dust 3) Heavy Metal Waste Material 4) Ignitable Wastes 5) Other Reactive Wastes 6) Solvent Still Bottoms 7) Spent Solvents 8) Strong Acids and Alkalies 9) Other | 1) 1 2) 2.9 3) 5.2 4) 18 5) 1.4 6) 2.1 7) 48 8) 20 9) 21 | 1) 0.96 2) 0.27 3) 0.49 4) 1.72 5) 0.13 6) 0.20 7) 4.60 8) 1.92 9) 0.20 |
| Wood Processing | 0 | 0 | 2400 | 1) Wastewater Containing Wood Preservatives | 1) 100 | 1) 0 |

SQG INDUSTRY GROUP AND WASTE GENERATION INFORMATION

| Industry Groups | Total No. of Companies in the City of Hercules | Waste Generation (MT/YR) | Assigned SIC Code Group | Types of Wastes Produced | % of Total Volume | Volume of Waste by each Waste Type (MT/YR) |
|---|---|-----------------------------|-------------------------------|--|--|---|
| Formulators | 0 | 0 | 2900 | 1) Empty Pesticide Containers 2) Heavy Metal Dust 3) Cyanide Wastes 4) Heavy Metal Solutions 5) Ignitable Wastes 6) Ink Sludges Containing Chromium or Lead 7) Other Reactive Wastes 8) Pesticide Solutions 9) Spent Solvents 10) Strong Acids or Alkalies 11) Waste Pesticides 12) Other | 1) 2.1 2) 3.6 3) 1 4) 2.4 5) 15 6) 3.3 7) 3 8) 1.8 9) 53 10) 14 11) 1.4 12) 1 | 1) 0 2) 0 3) 0 4) 0 5) 0 6) 0 7) 0 8) 0 9) 0 10) 0 11) 0 12) 0 |
| Laundries | 18 | 16.2 | 7200 | 1) Dry Cleaning Filtration Residues 2) Other | 1) 99.8 2) 1 | 1) 16.17 2) 0.16 |
| Other Services Personal and Business Services | 52 | 36.4 | 7300 | 1) Ignitable Wastes 2) Spent Solvent 3) Strong Acids & Alkalies 4) Wastes Containing Ammonia 5) Wastes Containing Formaldehyde 6) Other | 1) 6.6 2) 1.3 3) <1 4) 3.4 5) 83 6) 5.4 | 1) 2.40 2) 0.47 3) 0.36 4) 1.23 5) 30.21 6) 1.96 |

SQG INDUSTRY GROUP A. WASTE GENERATION INFORMATION

| Industry Groups | Total No. of Companies in the City of Hercules | Waste Generation (MT/YR) | Assigned SIC Code Group | Types of Wastes Produced | % of Total Volume | Volume of Waste by each Waste Type (MT/YR) |
|-----------------------|---|-----------------------------|--|--|--|--|
| Photography | 0 | 0 | 7332, 7333, 7395, 8411 | 1) Ignitable Paint Wastes 2) Ignitable Wastes 3) Photographic Wastes 4) Solutions or Sludge 5) Spent Solvents 6) Strong Acids & Alkalines 7) Other | 1) 1 2) 1 3) 49 4) 48 5) 2.5 6) 1 7) 1 | 1) 0 2) 0 3) 0 4) 0 5) 0 6) 0 7) 0 |
| Textile Manufacturing | 0 | 0 | 0722, 1600, 1611, 1623, 1629, 1794, 3711, 3732, 4210, 4212, 4213, 4224, 4469, 4478, 4789, 5171, 5270, 5499, 5500, 5531, 5541, 5551, 5561, 7531, 7538, 7542, 7692, 7699, 7720, | 1) Solvent Still Bottoms 2) Spent Solvents 3) Other | 1) 18 2) 78 3) 4.8 | 1) 0 2) 0 3) 0 |
| Equipment Repair | 6 | 3 | 4600, 4800, 7500, 7600 | 1) Ignitable Wastes 2) Ignitable Paint Wastes 3) Spent Solvents 4) Strong Acids & Alkalies 5) Other | 1) 14 2) 1 3) 78 4) 3.8 5) 4 | 1) 0.42 2) 0.03 3) 2.34 4) 0.11 5) 0.12 |

SQG INDUSTRY GROUP AND WASTE GENERATION INFORMATION

| Industry Groups | Total No. of Companies in the City of Hercules | Waste Generation (MT/YR) | Assigned SIC Code Group | Types of Wastes Produced | % of Total Volume | Volume of Waste by each Waste Type (MT/YR) |
|-------------------------|---|-----------------------------|-------------------------------|---|--|--|
| Vehicle Maintenance | 3 | 17.1 | 1600 | 1) Ignitable Paint Wastes 2) Ignitable Wastes 3) Paint Wastes Containing Heavy Metals 4) Spent Solvents 5) Strong Acids & Alkalies 6) Used Lead Acid Batteries 7) Other | 1) 1 2) 1 3) 1 4) 10.6 5) 3 6) 86 7) 1 | 1) 0.17 2) 0.17 3) 0.17 4) 1.81 5) 0.51 6) 14.70 7) 0.17 |
| Construction | 26 | 10.4 | 1500, 1700 | 1) Ignitable Paint Wastes 2) Ignitable Wastes 3) Spent Solvents 4) Strong Acids & Alkalies 5) Other | 1) 48 2) 9.2 3) 30 4) 1.4 5) 11.1 | 1) 5.00 2) 0.96 3) 3.12 4) 0.15 5) 1.15 |
| Motor Freight Terminals | 1 | 1.1 | 4900 | 1) Ignitable Paint Wastes 2) Spent Solvents 3) Used Lead-Acid Batteries | 1) 25 2) 11 3) 64 | 1) 0.28 2) 0.12 3) 0.71 |

SQG INDUSTRY GROUP AND WASTE GENERATION INFORMATION

| Industry Groups | Total No. of Companies in the City of Hercules | Waste Generation (MT/YR) | Assigned SIC Code Group | Types of Wastes Produced | % of Total Volume | Volume of Waste by each Waste Type (MT/YR) |
|--|---|-----------------------------|---------------------------------|--|----------------------|--|
| Metal Manufacturing | 1 | 1.7 | 3300, 3400, 3500, 3600, 3800 | 1) Cyanide Wastes | 1) 2.5 | 1) 0.04 |
| | | | | 2) Ignitable Paint Wastes | 2) 1.9 | 2) 0.03 |
| | | | | 3) Other Reactive Wastes | 3) 1 | 3) 0.02 |
| | | | | 4) Paint Wastes Containing Heavy Metals | 4) 1 | 4) 0.02 |
| | | | | 5) Solvent Still Bottoms | 5) 2.5 | 5) 0.02 |
| | | | | 6) Spent Plating Wastes | 6) 7.5 | 6) 0.04 |
| | | | | 7) Spent Solvents | 7) 61.6 | 7) 0.12 |
| | | | | 8) Strong Acids & Alkalies | 8) 19.5 | 8) 1.05 |
| | | | | 9) Wastewater Sludge Containing Heavy Metals | 9) 3.7 | 9) 0.07 |
| | | | | 10) Ignitable Waste | 10) 1 | 10) 0.02 |
| | | | | 11) Other | 11) 2.2 | 11) 0.26 |
| Furniture/Wood Manufacturing and Refinishing | 0 | 0 | 2434, 2435, 2436, 2492, 2511 | 1) Ignitable Paint Wastes | 1) 44 | 1) 0 |
| | | | | 2) Ignitable Wastes | 2) 19 | 2) 0 |
| | | | | 3) Solvent Still Bottoms | 3) 3.5 | 3) 0 |
| | | | | 4) Spent Solvents | 4) 27 | 4) 0 |
| | | | | 5) Other | 5) 6.4 | 5) 0 |

SQG INDUSTRY GROUP AND WASTE GENERATION INFORMATION

| Industry Groups | Total No. of Companies in the City of Hercules | Waste Generation (MT/YR) | Assigned SIC Code Group | Types of Wastes Produced | % of Total Volume | Volume of Waste by each Waste Type (MT/YR) |
|---|---|-----------------------------|-------------------------------|--|----------------------|--|
| Printing and Ceramics | 6 | 4.2 | 2600, 2700 | 1) Cyanide Wastes | 1) 4 | 1) 0.16 |
| | | | | 2) Ignitable Wastes | 2) 1.5 | 2) 0.06 |
| | | | | 3) Ink Sludge Containing Chromium or Lead | 3) 1 | 3) 0.04 |
| | | | | 4) Photographic Wastes | 4) 52 | 4) 2.18 |
| | | | | 5) Spent Plating Wastes | 5) 5.6 | 5) 0.23 |
| | | | | 6) Spent Solvents | 6) 24 | 6) 1.00 |
| | | | | 7) Strong Acids or Alkalies | 7) 6 | 7) 0.25 |
| | | | | 8) Waste Ink Con- taining Solvents or Heavy Metals | 8) 8.5 | 8) 0.35 |
| | | | | 9) Other | 9) 1.6 | 9) 0.06 |
| Cleaning Agents and Cosmetic Manufacturers | 0 | 0 | 2841 through 2844 | 1) Heavy Metal Dust | 1) 1 | 1) 0 |
| | | | | 2) Ignitable Wastes | 2) 16 | 2) 0 |
| | | | | 3) Pesticide Solutions | 3) 24 | 3) 0 |
| | | | | 4) Solvent Still Bottom | 4) 1 | 4) 0 |
| | | | | 5) Spent Solvents | 5) 27 | 5) 0 |
| | | | | 6) Strong Acids or Alkalies | 6) 31 | 6) 0 |
| | | | | 7) Other | 7) 2 | 7) 0 |
| Other Manufacturing | 0 | 0 | | 1) Arsenic Wastes | 1) 2 | 1) 0 |
| | | | | 2) Heavy Metal Wastes | 2) 8 | 2) 0 |
| | | | | 3) Ignitable Wastes | 3) 21 | 3) 0 |
| | | | | 4) Solvent Still Bottom | 4) 1 | 4) 0 |
| | | | | 5) Spent Solvents | 5) 66 | 5) 0 |
| | | | | 6) Other | 6) 1.8 | 6) 0 |

SQG INDUSTRY GROUP A WASTE GENERATION INFORMATION

| Industry Groups | Total No. of Companies in the City of Hercules | Waste Generation (MT/YR) | Assigned SIC Code Group | Types of Wastes Produced | % of Total Volume | Volume of Waste by each Waste Type (MT/YR) |
|---|---|-----------------------------|-------------------------------|--|---|---|
| Paper Industry | 0 | 0 | 2611, 2621, 2631, 2661 | 1) Ignitable Wastes 2) Solvent Still Bottoms 3) Spent Solvents 4) Strong Acid & Alkalies 5) Other | 1) 24 2) 1 3) 68 4) 7.5 5) 1.1 | 1) 0 2) 0 3) 0 4) 0 5) 0 |
| Educational and Vocational Shops | 0 | 0 | 8211, 8249, 8331 | 1) Ignitable Wastes 2) Ignitable Paint Wastes 3) Other Reactive Wastes 4) Spent Solvents 5) Strong Acid or Alkalies 6) Other | 1) 27 2) 15 3) 13 4) 23 5) 19 6) 3.9 | 1) 0 2) 0 3) 0 4) 0 5) 0 6) 0 |
| Analytical and Clinical Laboratories | 12 | 13.2 | 8000 | 1) Ignitable Paint Wastes 2) Ignitable Wastes 3) Mercury Waste 4) Other Reactive Wastes 5) Spent Solvents 6) Strong Acids & Alkalies 7) Other | 1) 23 2) 24 3) 1 4) 12 5) 48 6) 14 7) 1 | 1) 3.03 2) 3.16 3) 0.13 4) 1.58 5) 6.33 6) 1.84 7) 0.13 |

SQG INDUSTRY GROUP AND WASTE GENERATION INFORMATION

| Industry Groups | Total No. of Companies in the City of Hercules | Waste Generation (MT/YR) | Assigned SIC Code Group | Types of Wastes Produced | % of Total Volume | Volume of Waste by each Waste Type (MT/YR) |
|-------------------------------|---|-----------------------------|-------------------------------|--------------------------------|----------------------|--|
| Wholesale and Retail Sales | 55 | 38.5 | 5000, 5200 | 1) Ignitable Paint Wastes | 1) 12 | 1) 4.62 |
| | | | | 2) Ignitable Wastes | 2) 1 | 2) 0.38 |
| | | | | 3) Spent Solvents | 3) 18 | 3) 6.93 |
| | | | | 4) Strong Acids or Alkalies | 4) 11 | 4) 4.23 |
| | | | | 5) Waste Pesticides | 5) 7 | 5) 2.69 |
| | | | | 6) Other | 6) 95 | 6) 36.57 |

IX. ECONOMIC DEVELOPMENT

I. INTRODUCTION

A. Background

Although almost 90 years old, in the last 15 years the City of Hercules has completed one major transition and has begun another. The City of Hercules was founded in the 1870's as a company town; and the production of dynamite, and later fertilizer, dominated the economic aspects of life in the town. In 1974, the town moved through its first major transition, when the production of fertilizer ceased, the company town framework was dismantled, and the land surrounding the plant equipment was sold to private developers. Since then, Hercules has been one of the most rapidly growing cities in California; the 1975 population of about 150 rose to approximately 15,000 in mid-1989. This rapid growth included two major annexations (Marsten and Hanna Ranches), and was fueled, in part by rapid employment growth in San Francisco, Oakland, and Central Contra Costa County. This rapid growth also provided revenue (project review fees and increased property taxes), allowing the "new" Hercules to provide full municipal services.

During this rapid residential development, the retail, commercial, and industrial sectors of the community developed only minimally. While a small shopping center (Sycamore Place) was built in the early 80's, the first community shopping center (Creekside) opened in 1983; the first buildings in the North Shore Business Park opened in 1987. By 1989, non-residential development in Hercules provided only about 700 jobs, requiring most of the employed residents to seek employment in other cities.

In 1988, the City began its second major transition. Development plans for most of the larger residential properties had been approved, and most major projects had been completed. Full "build-out" of the residential properties could be expected in 3-4 years. At the same time, the revenue picture for the City was also shifting from a "growth" basis to a "maintenance" basis. Revenue associated with development activity was decreasing substantially, and this decrease was expected to continue. In addition, employed residents continued to work at jobs in other cities, and the time and difficulty involved in commuting continued to increase as congestion on Bay Area freeways continued to worsen. All of these factors focused the City's attention on the remaining, vacant non-residential properties.

In August, 1989, the City Council initiated a process for establishing an economic development program in the City and, as the first phase, appointed 21 members to an Economic Development Strategy Planning Task Force. This Task Force met monthly (or more often) through May, 1990. The Task Force reviewed data on development potential, environmental issues, and City finances, and recommended a series of development goals, strategies, and objectives to the City Council. In June, 1990, the City Council adopted the City of Hercules Economic Development Strategy Plan.

The Plan summarizes the data and analysis discussed by the Task Force into a set of major findings as shown in the following section.

B. Major Findings of the Economic Development Strategy Planning Task Force

1. City Resources and Service Delivery

- Development in the Redevelopment Agency area has the potential to generate substantial new revenue;
- City budget faces a shortfall as infrastructure and maintenance service requirements and costs rise faster than revenues;
- City budget is now dependent on interest earnings;
- City needs to look at new traditional and non-traditional revenues;
- New bond issue could fund needed capital improvements;
- New development will not solve City budget problem (due, in part, to low property tax allocation); but it may contribute to solution;
- Over the last decade, community development fees have been a major source of revenue;
- Slow revenue growth will constrain City services;
- The ability of households to absorb new taxes should be examined.

2. Demographics

- Community desires new shopping opportunities and services;
- Community is culturally and ethnically diverse;
- Employed residents commute to work outside City;
- Median income is between \$51,000 and \$60,000;
- Residents are well-educated (75% attended college), and many pursue professional careers (31% of workers);
- Residents expect high level of police, fire and recreation services;
- Retail spending goes outside the City, and little comes in from outside;
- Small daytime population provides little support to local businesses.

3. Environmental

- New development may not degrade regional air quality;
- New businesses may involve some use of hazardous materials, City and businesses must pro-actively manage;
- Refugio Creek corridor will be extended west of San Pablo Avenue;
- The bayfront offers opportunity for unique open space and development;
- The General Plan includes open space protection;

The Task Force adopted this finding in recognition of regulations adopted by the Bay Area Air Quality Management District that do not allow new businesses to cause an increase in air pollutant emissions.

4. Housing

- Approved residential projects are nearing build-out;
- Current housing offers limited range, few "affordable" or "top-end" units;
- Limited population constrains retail market;
- The City acknowledges an obligation to produce "affordable" housing;
- The cost to provide municipal services to the residential community exceeds revenue to City.

5. Land Use

- City General Plan calls for a balance of residential, retail, commercial and industrial development in the community;
- Commercial and industrial land is still available as a resource, however benefits from industrial development are not likely to occur in the immediate future due to current market conditions;
- Commitment to balance development with open space is established by General Plan;
- Residential land in current General Plan is approaching build-out.

6. Other Infrastructure

- Additional sewage treatment capacity is critical for City to develop its retail, commercial and industrial base;
- Activated sludge sewage treatment technology could price land out of the market, alternative technology is under study;
- Cost to provide additional sewage treatment capacity is currently under study;
- Current maintenance level for public facilities is high;
- Roads, facilities, etc. increasingly need maintenance.

7. Sphere of Influence

- Development will require wastewater treatment capacity and additional City and Fire District services;
- New development in Sphere of Influence will not solve financial crisis;
- Tax sharing agreement requires joint planning with County;
- There is a need to control development along City's borders;
- There will be no new access to Highway 4 until freeway is completed.

8. Transportation

- I-80/SR 4 junction provides regional access and is a potential congestion point;
- Improvements to local streets to expand capacity are required;
- Local and regional mitigation fees will likely be required for new development;
- Resolution or continuation of congestion will have high impact on future land use;

- State and regional agencies make transportation decisions that affect Hercules and can impact City's ability to develop retail, commercial and industrial base.

C. Purpose

This Element provides the policy basis and conceptual framework for pursuing economic development in Hercules. It provides direction for both short-term and long-term economic development activities. The City intends to pursue economic development in order to promote and maintain the unique quality of life in Hercules and to achieve financial self sufficiency.

The Plan is based on the Economic Development Strategy Plan, which found that economic development would be consistent with, and in fact, would support the overall General Plan objectives and policies (as stated in Chapter I of the General Plan). These objectives and policies call for development of a community that provides a balance among residential and non-residential land uses, among private and public services, and among developed areas and open space. This Element incorporates economic development into this context.

D. Authority

California law authorizes cities and counties to adopt General Plan Elements in addition to the seven required Elements. Section 65303 of the California Government Code states, "The General Plan may include any other Elements or address any other subjects which, in the judgement of the legislative body, relate to the physical development of the county or city." As discussed above, the City Council directed the preparation of this Element to establish city economic development goals and objectives as part of the City's fundamental set of policies.

E. Consistency with Other General Plan Elements

State law requires that all Elements of a General Plan must be internally consistent. The following paragraphs discuss the relationship and interconnections between this Element and the other Elements of the Hercules General Plan.

1. Land Use Element

The objectives and policies in the Land Use Element are generally consistent with the objectives and policies of this Element, in that they both provide for development of Hercules as a balanced community. Since this Element does not discuss development policies, intensities, or densities for any particular properties or areas, this Element does not present any conflicts with the Land Use Element. An update of the Land Use Element is scheduled for Winter/Spring of 1991; any minor inconsistencies will be resolved as part of that process.

2. Circulation/Scenic Highways Element

The Circulation Element calls for the provision of an adequate system of streets throughout the City, and the provision of public transit. These objectives are consistent with this Element, which calls for provisions of adequate infrastructure (including streets and roads), to serve new non-residential development. Since this Element does not discuss

alignments, design standards or, any specific streets, this Element does not conflict with the Circulation Element. The Circulation Element is scheduled for update in Winter/Spring 1991, and any minor inconsistencies will be resolved as part of that process.

3. Housing Element

The Housing Element calls for development of new housing, particularly affordable housing, as part of improving the balance between jobs and housing in the Bay Area. The Housing Element does not create any conflicts with this Element because it states that the City's need for housing through 1995 can be accommodated by development of existing residentially-designated areas, and the City currently has a substantial shortage of jobs (compared to the number of employed residents). These two Elements are also consistent in their goals and policies calling for the provision of new affordable housing in Hercules, since the Housing Element does not call for a conversion of non-residential land to residential use, and this Element acknowledges the need for providing affordable housing in Hercules. The Housing Element also calls for considering mixed use (housing and commercial) in the City; designating such an area would be consistent with this Element.

4. Open Space/Conservation Element

The Open Space Element calls for the preservation of public open space in the City, as well as protection of creek environments and the mitigation of geologic hazards. This Element is consistent with these policies because it acknowledges the importance of preserving and enhancing the City's open space system, and identifies the potential for use of Refugio Creek as a buffer area between residential and non-residential development.

5. Safety/Seismic Safety Element

The Safety Element calls for the protection of the public health and welfare through the mitigation of seismic, geological, fire, and flood hazards. This Element does not conflict with the goals and policies of the Open Space Element because it acknowledges the need to manage environmental concerns through the development review process, and does not call for developing non-residential areas in a manner that would create any threats to the public health or safety.

6. Noise Element

The Noise Element calls for protecting the residents of Hercules from excessive noise levels. It documents current and projected noise levels, and provides a summary table that relates land use to noise exposure criteria. This Element does not create any conflict with the Noise Element because it does not propose locating residential or non-residential development in a manner that would violate the noise criteria.

7. Hazardous Waste Element

The City Hazardous Waste Plan was adopted as an Element of the General Plan in October, 1990. It describes the amount and types of hazardous waste currently generated in the City, and recommends a regional approach to minimizing the amount of hazardous waste generated throughout West

Contra Costa County. This Element is consistent with the Hazardous Waste Plan because it calls for attracting industrial and other businesses that would not pose a significant threat to the public welfare, and the waste minimization goals and the Hazardous Waste Plan could help private industry lower production costs by substituting non-hazardous materials for hazardous materials in industrial process.

II. GOALS AND OBJECTIVES

A. Community Strengths and Weaknesses

The economic development strategy planning process began with a comprehensive review and analysis of the existing conditions in Hercules and the opportunities, resources, constraints and problems these conditions present to economic development. An accurate and realistic understanding of these "strengths" and "weaknesses" provide the necessary basis for successful economic development. In this context, the community strengths are those attributes which enhance, or contribute to the community's desirability. These characteristics can be utilized to promote economic development opportunities and need to be maintained over time as the basis for successful development. The community weaknesses show where work is needed and to appropriately target economic development efforts.

As identified by the economic development strategy planning process, strengths offered by Hercules for economic development include:

- Resident's high household income relative to other nearby areas.
- The affordable and attractive housing available in Hercules.
- The positive City Council attitude toward economic development.
- The high level of civic pride evidenced by residents.
- Hercules' proximity and ease of access to other Bay Area communities.
- The room available for expansion and abundant natural attributes of the Hercules location.
- The generally high quality of life available in Hercules.

Weaknesses identified through the strategy planning process include:

- Increasing traffic congestion in the City and on major highways.
- Existing limited business development and business diversity.
- Lack of adequate ongoing revenues to support City operations.
- Lack of strong a non-residential community identity.
- Infrastructure beginning to age and need rehabilitation.
- Need for additional child care and other community services.
- Need for education system improvement.

B. Economic Development Goal

The Economic Development Strategy Planning Task Force began the planning process by identifying the overall goal of balanced development and maintenance of the community's high quality of life. At the outset, the Task Force took the approach of analyzing the existing obstacles to the achievement of these goals. The Task Force developed a problem statement which incorporates the specific community issues constraining balanced development and the community's ability to sustain the high quality of life. These problem statements are:

- Revenue constraints affect the City's ability to meet existing and future needs for service.
- A lack of business affects City revenues, and a lack of business diversity may affect residents' perceptions of the quality of life in Hercules.
- Hercules lacks a strong non-residential community identity and image as perceived by the Bay Area, as well as an internal sense of community.
- The residential sector of the community has reached build-out and has created a large demand for services.
- Regional influences will, to an increasing extent, impact future development in Hercules.
- Environmental constraints must be weighed in the process of responsible, long term economic development.

After thorough analysis of these issues, the Task Force developed the comprehensive goal statement for economic development planning and programs in Hercules:

Generate increased revenue and business activity while maintaining Hercules' special quality of life.

C. Economic Development Objectives

Economic development in Hercules is intended to leverage the community strengths for successful economic development, address the several community weaknesses identified previously, and to achieve several specific objectives. Identification of these objectives and a brief discussion follows.

1. New Retail Business Development

Hercules currently suffers from a lack of diversity and availability of goods and services desired and needed by residents. In the Hercules Household Survey, conducted as part of the economic development strategy planning process, residents expressed a strong desire for the type and variety of shopping opportunities normally available in suburban communities. The high level of household income available in Hercules indicates that residents transact a significant amount of taxable retail sales activity outside the community. This sales tax "leakage" represents a serious problem for Hercules since the post-Proposition 13 tax structure seriously restricts the available property tax revenues to support municipal operations. Most California cities rely heavily upon sales tax revenues for support of regular municipal operations.

The order of these objectives is taken from the Economic Development Strategy Plan.

Objective:

Reduce sales tax leakage, target specific retail businesses for development, provide on-going support to retail businesses, and provide the goods and services needed by residents.

2. City Revenue and Service Costs

Hercules is currently experiencing a serious revenue shortfall, with on-going revenues available to support City operations and services inadequate to meet the increasing needs for City services and the rising costs of providing services. This shortfall has its origins in the City's current (second) transition. In the 1970's and early to mid-1980's, City operations were funded by plentiful development service fee revenues, interest earnings on windfall refinery sales tax revenues and pre-Proposition 13 property taxes. Due to the rapid residential development, development service fees have provided as much as 40% of the City's total annual financial resources. These revenues have declined substantially and will continue to decline as Hercules approaches and then attains residential build-out.

With the substantial decline in development service revenue in Fiscal Year 1989-90, interest income became the primary source of City revenue. This is not a desirable municipal revenue structure since reliance upon interest income to fund routine, on-going municipal operations, in effect, "freezes" the reserve fund principal in order to earn the necessary interest income. Use of the reserve fund principal would cause rapid escalation of operating deficits.

Concurrent with the decline in operating revenues, Hercules is experiencing increases in the demands for services and the cost of meeting these demands. The population growth and the normal aging of the City's infrastructure have combined to restrict the City's ability to operate on a constrained revenue base. While the population has increased 15-20% annually since 1975, revenues have increased at a rate of only 2-5% annually. New revenue sources are critical to the City's on-going ability to meet the demands for services and to achieve the financial self-sufficiency required to ensure on-going maintenance of the community's high quality of life.

Objective:

Maximize the collection of existing revenue and adopt new on-going revenues, as needed, to continue providing quality City services; and, maintain and promote efficiency in City operations.

3. Human Resource Development

The economic development strategy planning process identified that the Hercules community and the residents themselves offer significant resources to support economic development. The community is well-maintained, aesthetically pleasing, and has a relatively low crime rate. Adequate community facilities are available or under development to serve the residents and a high level of community services and a wide

variety of recreational programs are offered by the City. These facilities and services assist in supporting the sense of community and are necessary to provide a desirable environment for economic development.

Hercules residents are highly educated and supportive of quality education. The demographic profile of Hercules residents suggests that Hercules residents offer a highly skilled labor pool for local business. The Economic Development Strategy Plan identifies that the high standards for community infrastructure, facilities and maintenance, the community life and the resident demographic profile are factors which can be promoted to make the community attractive to business and to attract economic development.

Objective:

Create a positive environment for economic development by maximizing human resource and community attribute potential. This objective includes promoting citizen involvement in the community and the educational system, and continuing to insure provision of adequate health, safety, recreation and social programs in the community.

4. New Industrial Business Development

The original intent for the development of the community as expressed in the General Plan identifies that business development would include a balance mix of commercial, retail and industrial businesses. This intent has not been realized, with business growth in all of these areas lagging behind the City's residential growth. Industrial sector development is important to the community in order to afford economic diversity and to provide jobs and an adequate daytime population in the City.

Achievement of the industrial sector development objective includes the identification of particular industrial businesses desired in the community and active efforts to promote and recruit these businesses. The Plan also identifies the need to develop criteria for management and regulation of industrial businesses to ensure that the businesses are compatible with the residential character of the community and do not expose residents to significant environmental risk.

Objective:

Target specific industrial businesses and actively promote industrial sector development. Clarify City standards for industrial development to insure that environmental quality standards are maintained and the overall quality of life is not degraded, without effectively, putting the City out of the market for new development.

5. Effective Management of Regional Influences Related to Economic Development

The current operating environment for cities is increasingly being impacted by the need to develop cooperative processes and solutions to problems region-wide. The City is no longer in a situation which allows the City to identify and implement solutions to problems such as traffic

flow, solid waste management and air quality on its own. These issues increasingly create impacts throughout the regional area.

In order to be effective, economic development in Hercules must be planned and implemented to provide for management of regional considerations. This includes measures to insure adequate infrastructure for sewage treatment, traffic flow and solid waste management. It also includes participation in the regional operating environment to ensure that the City's needs and interests are adequately represented. In addition, the City will need to effectively manage development in the Sphere of Influence to ensure maintenance of the quality of life in Hercules.

Objective:

Represent and promote local interest in the regional operating environment in order to support economic development.

6. Employment Development

Hercules residents have an extremely high rate of employment and many residents are employed in professional positions. There are currently few jobs available in Hercules businesses, particularly professional type jobs and many residents commute to San Francisco. This adds traffic to the freeway system and degrades residents' quality of life. Increasing the employment opportunities in Hercules will provide local jobs for residents and also increase the day time population in the City to support the City's retail businesses.

Objective:

Encourage local businesses to employ Hercules residents and target businesses for development which can offer jobs for Hercules residents.

7. Effective Economic Utilization of the Redevelopment Agency

The Hercules Redevelopment Agency was formed to complete a series of capital improvement projects designed to establish the infrastructure needed for development. The City's transition to a new stage in its development has created new needs. The community now needs to focus on the attraction of new development opportunities in order to effectively utilize the available land as a resource to attain its economic development goals. State redevelopment law provides redevelopment agencies with significant ability to induce development. The activity of the Redevelopment Agency is an important component of economic development and should be evaluated to insure that the Agency is being used in the most effective manner in order to promote economic development.

Objective:

Use the Redevelopment Agency to promote economic development.

8. New Commercial Development

As discussed previously, the General Plan calls for balanced development of the community. The commercial sector has been slow to develop, similar to the other business sectors. Commercial development offers the potential to increase the number of jobs in the community and to provide necessary business services to residents and to support services to other businesses. In addition, the Task Force reviewed the possibility of exploring some innovative concepts in the commercial business sector, building upon specific community needs and the promotion of community strengths. These could include review and evaluation of the potential for development of a sports/recreation center, a waterfront commercial area or leveraging the cultural diversity in Hercules to support a regional training and research facility.

Objective:

Attract and support new commercial business development to achieve community balance and create jobs.

9. Business Retention

Many Hercules businesses have had difficulty in sustaining their operations as a result of several factors. Business turnover has been a factor negatively influencing economic development. As previously discussed, the community currently lacks an adequate day time population to support local businesses. Many businesses need access to support services and programs which are currently not available in the community. In addition, specific design features of community business areas may constrain the visibility and access needed by many businesses.

Objective:

Retain and support existing businesses through creation of a positive business environment and through programs to strengthen and promote development of existing businesses.

III. POLICIES AND PROGRAMS

Achieving the goals and objectives outlined in Chapter II will not be easy. Hard work and patience will be required of the City Council, City Commissions, and City staff if the vision embodied in these goals and objectives is to be realized. Achieving these goals and objectives will, however, substantially contribute to the quality of life in Hercules. The following sections describe the policies that will shape the City's efforts to achieve these goals and objectives, and the programs that the City will perform to implement these policies.

A. Public Infrastructure Projects

The City of Hercules faces service capacity constraints in two critical public infrastructures: traffic, and sewage treatment. The major findings from the Economic Development Strategy Plan showed that these constraints can seriously impair the City's ability to achieve economic development.

1. Sewage Treatment

Policy Statement - The City of Hercules recognizes the need to provide sewage treatment capacity that is sufficient to treat wastewater from existing and foreseeable development in the City, without causing violations of water quality standards.

Program - Review alternatives for providing new wastewater treatment capacity and develop new capacity (including review of potential for obtaining capacity from adjacent facilities, identification of preferred treatment technology, identification of preferred financing method, environmental review, design and construction).

Schedule - Identify preferred technology and financing: mid-1991.
Complete Construction: mid-1993.

Responsible Department - City Manager's Office

2. Traffic on Local Streets

Policy - The City of Hercules will continue to monitor traffic improvement needs and will expand the capacity of local streets as required, in order to meet the traffic service standards in the Circulation Element and Growth Management Element (when adopted).

Program - Plan, design, and construct improvements to local streets, with project priority to be determined through the Capital Improvements Program budget process, based on existing and foreseeable congestion.

Schedule - On-going

Responsible Department - Department of Public Works

3. Transportation/Circulation Planning

Policy - Through the Circulation Element, the City will conduct and periodically update computer-based modeling of traffic operations on local streets at full build-out of the community.

Program - Review the 1987 City-wide Traffic Study, and update or replace the study as may be appropriate, in order to provide a reasonable description of local and regional traffic at full build-out of the City.

Schedule - Early-mid 1991

Responsible Department - Departments of Public Works and Planning

B. Business Retention and Promotion

The economic development strategy planning process identified that Hercules business have difficulty sustaining their operations due to several factors. Among these are inadequate visibility and promotion, lack of access to resources and information and a small daytime population available in the community. Several businesses have either left the community or must struggle to make their businesses viable. A legitimate program to promote retention and development of existing businesses by providing resources and services to the business community is an important aspect of a comprehensive economic development program.

Policy Statement: The City of Hercules will develop an on-going business retention and development program to make business assistance resources available to existing businesses in the community and to strengthen the Chamber of Commerce.

Program: Work with the Chamber of Commerce and other community business people to develop an action program to strengthen the Chamber of Commerce and to assist and promote existing business development. The program could include activities to provide direct business assistance resources to individual businesses; to review and revise the City's sign ordinance and signage programs; to develop and make available an information brochure on the community; to review and evaluate the needs of businesses and the conditions which encourage business activity; to expand Chamber of Commerce membership and participation; and to strengthen the Chamber of Commerce organization and member benefits.

Schedule: Mid-1991

Responsible Department: City Manager's Office

Policy Statement: The City of Hercules will continue to provide and encourage the community programs which support a positive business environment and will work toward greater visibility of the community to promote business activities.

Program: Provide community facilities and programs to serve resident needs, enhance the quality of community life, and contribute to an overall positive business environment. Monitor and ensure the availability of necessary community services.

Schedule: On-going

Responsible Department: City Manager's Office

C. Target and Attract New Businesses

Business development in Hercules has lagged behind the rapid residential growth, causing a deficiency in the availability of goods and services needed and desired by residents. The results of the Hercules Household Survey show that Hercules residents are generally supportive of new business development which will make these goods and services available in the community.

Policy Statement: The City of Hercules will identify business types with potential for development in Hercules.

Program: Contract for the completion of a comprehensive market analysis to form the basis for the development of an on-going marketing program.

Schedule: 1991

Responsible Department: City Managers' Office, Planning Department

Policy Statement: The City will actively seek new business development opportunities and will actively promote the community as a place to do business.

Program: Develop an on-going marketing program targeted to the opportunities identified through the market analysis.

Schedule: On-going

Responsible Department: City Manager's Office

D. Directly Participate in Development Activities

Several resources are available to the City and the Redevelopment Agency to actively encourage and participate in business development activities. These might include participation in business ventures, use of development agreements, and use of redevelopment.

1. Development Review

Policy Statement: The City of Hercules will carefully evaluate business development proposals in order to completely assess the proposed project's net impact to the overall fiscal condition of the City.

Program: Develop a comprehensive framework for review of development proposal to include a fiscal impact analysis and criteria for encouragement of specific development opportunities.

Schedule: On-going

Responsible Department: City Manager's Office, Planning Department

2. Development Agreements

Policy Statement: The City of Hercules recognizes the role and value of development agreements in encouraging desired business development. The City also recognizes the potential benefit to business interests in that a development agreement can provide opportunities to mitigate the risk derived from uncertainty in the development process. The City will consider use of a development agreement in situations where it can clearly be demonstrated that a strongly positive benefit will be obtained by the City.

Program: Develop guidelines and criteria for use of development agreements to attract development and provide benefit to the City.

Schedule: Complete in 1991; Use on-going

Responsible Department: City Manager's Office

3. Redevelopment Agency:

Policy Statement: The City of Hercules recognizes that redevelopment may offer opportunities for attracting desired business development and that the project scope of the Redevelopment Agency's activities may be modified to enhance economic development.

Program: Review and evaluate the potential for modification of the Redevelopment Agency work program to focus on attracting economic development.

Schedule: On-going

Responsible Department: City Manager's Office.

E. Regional Interaction

As part of Contra Costa County, and the Bay Area, economic development in Hercules can affect neighboring cities and counties. In addition, policies or actions undertaken by other cities, counties, or the State may impact the City's ability to achieve economic development goals. Therefore, this Element includes policies and programs to respond to regional issues.

1. Transportation on Regional Routes

Traffic and congestion on regional routes in the Bay Area continues to increase, and regional routes in Hercules are no exception. A series of committees and task forces has been established in the past to respond to transportation issues, and new committees and programs can be expected in the future.

Policy: The City will work cooperatively with other agencies to reduce congestion on regional traffic routes without impairing the long term ability of the City to provide services.

Program: The City will continue actively to promote and participate in transportation planning for regional routes through the West Contra Costa Transportation Advisory Committee, its technical advisory committee, the Contra Costa Transportation Authority, and other regional transportation bodies.

Schedule: On-going.

Responsible Department: City Manager's Office, Planning Department, Engineering Department.

Program: The City will adopt a master plan and program for improvements to regional routes within and adjacent to the City of Hercules.

Schedule: 1991.

Responsible Department: Engineering Department

2. Sphere of Influence

Existing development adjacent to the City under County jurisdiction impacts City services in a number of ways. City Police provide either first response or backup response for the County Sheriff (through mutual aid agreement), and non-residents enjoy City parks and other open space areas. Additional development in adjacent unincorporated areas could exacerbate this situation.

Policy: The City will pursue annexation of the unincorporated areas within its Sphere of Influence to control development of these areas so that City service capability is not adversely impacted.

Program: Secure approval of Franklin Canyon Golf Course annexation (including environmental review, and Local Agency Formation Commission approval). Prepare a Specific Plan for the remainder of the Sphere of Influence. Pursue annexation of other properties in the Sphere of Influence, as may be requested by the property owners.

Schedule: Annexation: 1991 and Specific Plan: 1992.

Responsible Department: City Manager's Office, Planning Department

3. Air Quality

Air quality has become a critical issue for new development and quality of life in the Bay Area. Regulation by the Bay Area Air Quality Management District and the California Air Resources Board may constrain the City's economic development program by increasing the cost of doing business in the Bay Area.

Policy Statement: The City will assist in the improvement of air quality as one part of "quality of life."

Program: The City will monitor air quality programs at the regional and State level to help insure that a balance is maintained between air quality and other quality of life issues, and will review new development to ensure that adopted air quality standards are not violated.

Schedule: On-going

Responsible Department: Planning Department

4. Housing

Please refer to the Housing Element for a discussion of the City's role in resolving the regional housing problem in the Bay Area. Unfortunately, under the current property tax structure in California, residential development does not generate sufficient revenue to fully fund its service requirements. While the City acknowledges its portion of the responsibility to resolve the housing problems in the Bay Area, the long-term financial viability of the City requires that non-residential designated property not be converted to residential use. This does not eliminate the potential for consideration of mixed use (housing and commercial) in the City.

5. Solid Waste

While the disposal of solid waste is ultimately a State-wide problem, siting a new landfill in Contra Costa County has been drawn out over a number of years. It now appears that the County may designate one or more landfills; at this writing, these decisions are not final.

Policy Statement: The City of Hercules will continue to work with other cities in the County to site one or more new County-wide landfills, and to implement the requirements of Assembly Bill 939.

Program: The City will continue to support the West County regional effort to establish a transfer station for municipal solid waste, and implement AB 939.

Schedule: On-going

Responsible Department: City Manager's Office

6. Hazardous Waste

Please refer to the Hazardous Waste Management Plan for discussion of City policies and programs for the management of hazardous waste.

F. Private Development

As discussed in the Goals and Objectives (Chapter II), a successful economic development program must include a clear statement of the City's

expectations for new privately-sponsored development. Following from the vision of a balanced community, the City must designate areas for non-residential uses/activities, and state clearly its expectations for development intensity, long-term use, and other development criteria. It must then consistently apply these criteria through a fair and open process.

1. Development Policies and Criteria

Policy Statement: The City shall clearly state its intent, expectations, and evaluation criteria for new development.

Program: Complete a market study to identify opportunities for new non-residential development in Hercules (development "niches").

Schedule: 1991

Responsible Department: City Manager's Office, Planning Department

Program: Update the Land Use Element, including identification of preferred areas for retail, commercial, and industrial land uses.

Schedule: 1991

Responsible Department: Planning Department

Program: Revise/Update the Zoning Ordinance to implement revised Land Use Element.

Schedule: Begin: 1992, following update of Land Use Element

Responsible Department: Planning Department

2. Development Review Process

Policy Statement: The City shall establish and publicize a development review process that includes analysis of all relevant issues in a timely manner, so that development applications can be presented for final action without undue delay.

Program: Reevaluate and revise City application review procedures to establish a centralized, "one-stop" permitting information center, and to establish reliable expectations for permit review schedules.

Schedule: March 1991

Responsible Department: City Manager's Office, Planning Department, Public Works Department (Engineering and Building Divisions)

Program: The City shall periodically review permit application requirements and review procedures, and revise as warranted to resolve problems or "bottle-necks".

Schedule: On-going

Responsible Department: City Manager's Office, Planning Department, Public Works Department (Engineering and Building Divisions)

IV. IMPLEMENTATION

A. Coordination

The Economic Development Strategy Plan was developed as a planning and policy resource to guide the long-term efforts toward economic development and financial self-sufficiency for the City. Financial self-sufficiency is highlighted in the Strategy Plan as a necessary prerequisite for maintaining the quality of life. The Strategy Plan identifies a multifaceted approach to the achievement of the City's objectives. Implementation of the Plan will involve all City departments and will require a high level of coordination and management.

Coordination and oversight of the economic development programs identified in this Element will occur through the City Manager's office to ensure effective coordination among departments. The City Manager is responsible for the on-going oversight of departmental operations and implementation of City Council policy. The Assistant to the City Manager provides day to day management of economic development activities. As identified in the Element programs section, individual City departments will be responsible for project assignments and for specialized aspects of the overall economic development programs.

B. Review/Update Element

The major determinants of the Economic Development "environment" are constantly changing. In particular, local market conditions continue to evolve (partially in response to national economic trends), and regional and environmental issues are constantly changing. In addition, the City will gain experience in economic development through the performance of the programs identified in Chapter III, and will gain new insights into the benefits and impacts of economic development in Hercules.

In response, the City Economic Development Program includes an evolutionary component. The City staff will continue to monitor and report to the City Council regarding opportunities for constraints or economic development. Such reports will be made, at minimum, once-a-year through the budget preparation process, and may include recommendations to amend this Element. In addition, a full review and update of this Element will be scheduled no later than 1994. At that time, the City Council will fully review the successes (and failures) of the policies and programs described in Chapter III, and will establish new policies and programs to further the goal of establishing a balanced, vital, and fiscally-sound City.

The Task Force adopted this finding in recognition of regulations adopted by the Bay Area Air Quality Management District that do not allow new businesses to cause an increase in air pollutant emissions.

X. GROWTH MANAGEMENT ELEMENT

I. INTRODUCTION

The City of Hercules strives to sustain a desirable life-style by, in part, providing well designed and maintained local streets and public facilities and the services that they support. City economic development planning has shown that maintaining this life-style will require both developing the non-residential sector of the community and continuing to provide high quality public facilities and services. In fact, additional non-residential revenue will provide the revenue to maintain these facilities. This Element integrates performance standards for these facilities into the development review process so that new development helps to maintain and improve the quality of life in Hercules.

A. Background And Purpose

Measure C: In 1988, the voters of Contra Costa County approved the Contra Transportation Improvement and Growth Management Ordinance (Measure C). This measure intends to improve the quality of life in Contra Costa County by reducing congestion on major streets and highways, and by keeping new growth in balance with the capacity of public facilities. This measure increased the County-wide sales tax by 1/2 cent, and allocated the revenue from this increase to a specified list of transportation improvement projects and programs. It also includes an innovative program to upgrade maintenance of local streets and to promote growth management.

The measure allocates 18% of the sales tax increase revenue to cities in the county that implement a growth management program in compliance with Measure C requirements. This funding has become known as "Return-to-Source" funding. The purpose of this Element of the General Plan is to incorporate the spirit and the requirements of the Measure C Growth Management Program into the Hercules General Plan, and to qualify the City of Hercules for receipt of Return-to-Source funding.

Measure C specifies eight mandatory components for a "full-compliance" growth management program, including adoption of a Growth Management Element of the General Plan. It states further that this Element must include:

- traffic level-of-service standards for local streets (or "Basic Routes");
- performance standards for capital facilities for six public services (police, fire, parks, sewers, water and flood control); and,
- policies and programs to achieve and maintain these standards. Underlying this approach is the expectation that new development will pay for the facilities required to serve that development.

Economic Development: This Element expands upon the fundamental goals in this General Plan for new development. The Preamble calls for the City to develop as a balanced community, with a mixture of residential, commercial, office, industrial, and public uses. The City's Economic Development Strategy Plan (adopted in June, 1990) points out that the quality of life in Hercules is dependent on the adequate provision of economic opportunities and City services.

At present, achieving this vision of a balanced community means promoting the development of non-residential areas. The City now provides a variety of housing opportunities and residentially-oriented services, but employment and shopping opportunities are severely limited. Therefore, the intent of this Element is not to limit new development, but to manage new development in order to maintain, and enhance, the quality of life in Hercules.

B. Authority

California law authorizes cities and counties to adopt general plan elements in addition to the seven required elements. Section 65303 of the California Government Code states,

"The General Plan may include any other elements or address any other subjects which, in the judgement of the legislative body, relate to the physical development of the county or city."

As discussed above, this Element is included in the General Plan to establish city goals and policies to accommodate new development consistent with traffic service standards and the performance standards for public facilities.

C. Relation to Other Plan Elements

As one of the adopted Elements of the City's General Plan, this Element will help achieve the fundamental City goals of providing a desirable quality of life. In addition, the policies in this Element help to define the goals in other Elements by providing quantified standards for public facilities. New development will be evaluated for conformance with these standards, as well as the goals and policies in the other Elements.

D. Organization

The structure of this Element is based on the model element published by the Contra Costa Transportation Authority. The next section provides the goals, objectives and policies for the traffic standards. The following section presents the goals, objectives and policies for the six other types of public facilities.

II. TRAFFIC SERVICE STANDARDS AND PROGRAMS

A. Introduction

Measure C requires a qualifying Growth Management Element to include traffic level-of-service (LOS) standards for local streets (those streets not designated as "regional routes") and policies and programs to achieve and maintain those standards. This section presents those standards for the City of Hercules. Implementing documents for Measure C provide a system for establishing LOS standards for signalized intersections on local streets based on surrounding land use. These documents also indicate that traffic service standards for regional routes will be established in Action Plans, which are being developed by the regional transportation planning committees. These standards will allow the City to evaluate the traffic impacts of new development (through project traffic studies) and to verify adequate traffic operations (through annual review of key City intersections).

Measure C standards apply to signalized intersections because current traffic engineering analysis methods do not provide an estimate of overall LOS for unsignalized intersections.

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Streets not designated as Routes of Regional Significance are labeled under Measure C as "Basic Routes", and each agency has responsibility for traffic operations on these streets in its jurisdiction.

Measure C provides LOS standards for Basic Routes for different land use types in recognition that different streets serve different functions. Two of these types are found in Hercules, and are defined as follows.

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In addition, segments of Bayberry and Sycamore function more like streets in a "Major Commercial Center," because these street segments serve as the only connection between the east and west sides of the City, and the I-80 on- and off-ramps.

C. Goals

The following goals are adopted for traffic operations in the City of Hercules:

1. The City shall maintain traffic operations on streets that are designated as "Basic Routes" at the standard described below. These goals replace the Level-of-Service policy in the Circulation Element (page 11, policy 2a).

2. The City shall participate in the West Contra Costa Transportation Advisory Committee regarding traffic operations on Routes of Regional Significance, and shall help meet the goals and service standards for these routes by implementing the Action Plans for those routes, as adopted by the City and Contra Costa Transportation Authority.
3. New development shall be required to pay its fair share of the cost of improving existing City streets so that compliance with the designated LOS is maintained.
4. New development shall be required to pay its fair share of the cost of improving regional routes so that compliance with the service standard specified in the Action Plan (when adopted) is maintained.

Additional goals regarding the City circulation system are contained in the Circulation and Scenic Highway Element.

D. Traffic Service Standards for Basic Routes (Local Streets)

1. Traffic operations on City Basic Routes shall meet the following standards.

LOS High-D to Low-E (maximum v/c ratio is 0.94)

- Sycamore Avenue (from Bayberry to San Pablo Avenue)
- Bayberry (from I-80 ramps to Sycamore)

LOS "High" D - (maximum v/c ratio is 0.89)

- Sycamore Avenue (SR-4 - Bayberry)
- Refugio Valley Road (Sycamore - Redwood/Falcon)
- Alfred Nobel Drive
- Linus Pauling Drive
- James Watson Drive
- John Muir Parkway

LOS "Low" D - (maximum v/c ratio is 0.84)

- All other Basic Routes (that is, except Routes of Regional Significance).

Compliance with these standard shall be determined through preparation of a traffic study for each proposed project that would generate 100 or more peak hour trips (morning or evening). This study would estimate the existing LOS and project the future LOS (seven years after scheduled project occupancy) at all signalized intersections that would be affected by the proposed project. (Arterial streets are shown on the Circulation Plan in the Circulation Element.) The calculation of the future LOS will take into account all existing, approved and proposed projects (for which entitlement applications are complete when the traffic study is begun) and all existing and programmed street and highway improvements.

At the intersection of Bayberry and Sycamore, a LOS range is established to require careful consideration of the benefits of a project that would cause the LOS to reach Low-E. Projects that would not cause an exceedence of LOS High-D would be reviewed through the normal process. Projects that could result in Low-E would require approval by the City Council. The City Council

could approve such projects if it finds that the project provides substantial benefit to the City or the community through either the creation of substantial jobs, creation of a substantial long-term revenue potential to support City services, or the provision of a substantial amount of affordable housing. Projects for which this finding could not be made would not be approved through this process.

2. Objectives and Standards for Regional Routes in Hercules will be included in the Action Plan for those routes, and will be incorporated into this Element upon completion and adoption.
3. Measure C allows for a "Finding for Special Circumstance" at intersections on Basic Routes where physical or environmental conditions make further improvements to the intersection infeasible or inappropriate. Such a finding is subject to ratification by the Contra Costa Transportation Authority. Approval of a finding for a particular intersection will include alternative mitigation; projects that will generate traffic that will impact such an intersection shall be required to implement or participate in the alternative mitigation.

E. Implementing Policies and Programs

1. The LOS standards in this Element will be used to evaluate the traffic impacts of new developments, and no application shall be approved which may cause a violation of these standards unless either:
 - a. Improvements that will mitigate the projected LOS impact are programmed in the City's or Redevelopment Agency's Capital Improvement Program; or,
 - b. A Finding of Special Circumstances has been made for the intersection; or,
 - c. Improvements will be made by a project sponsor as part of a project.
2. The City shall develop and implement a mitigation program to insure that new development pays its fair share of the cost of maintaining adequate operations on the Basic Routes and the Routes of Regional Significance.
3. As mentioned above, a traffic study shall be performed for any proposed project that may generate 100 or more vehicle trips during the morning or afternoon peak hour. This traffic study shall be prepared in compliance with the technical guidelines issued by the Contra Costa Transportation Authority, and shall be funded by the project sponsor under the direction of City staff.
4. Mitigation measures and conditions of project approval may include payment of fees to fund improvements on Basic Routes or Routes of Regional Significance. Fees for improvements to Basic Routes shall be deposited in a separate City Traffic Mitigation Fund. Fees for improvements to a regional route shall be handled in accordance with the Action Plan for the affected regional route.
5. Improvements to Basic Routes shall be programmed through the City's Capital Improvement Program.

6. Improvements to a Route of Regional Significance which are sponsored by the City of Hercules shall also be programmed through the City's Capital Improvement Program.
7. Improvements to a Route of Regional Significance that are not sponsored by the City of Hercules shall be programmed by the sponsoring agency, and may be acknowledged in the City's Capital Improvements Program.
8. The City shall continue to participate actively (at both the staff and the policy level) in the West Contra Costa Transportation Advisory Committee and the Contra Costa Transportation Authority. Participation in these agencies shall include, but may not be limited, to full implementation of adopted Action Plans for Routes of Regional Significance in order to promote acceptable traffic movement on these routes. In the event that problems/issues cannot be resolved through discussion among the affected parties, the City will participate in CCTA's conflict resolution process.
9. The City shall report annually regarding compliance with the Measure C Growth Management Program, or as may be requested by the Contra Costa Transportation Authority.
10. The City shall adopt and implement a Transportation Demand Management Program, including the required policies adopted by the Contra Costa Transportation Authority. Such a program may be jointly implemented in western Contra Costa County by the five cities and the County through the West Contra Costa Transportation Advisory Committee.

III. PERFORMANCE STANDARDS FOR CAPITAL FACILITIES

A. Introduction

The Preamble to this General Plan calls for development of a balanced community; this section states performance standards to define "balance" with regard to capital facilities. These facilities provide the physical basis for public services provided by the City, the Rodeo-Hercules Fire Protection District and the East Bay Municipal Utility District (water). These performance standards will be incorporated into the development review process, and will be used to insure that new development does not exceed the capacity of capital facilities for the six cited services without providing funding for improvements to accommodate the new demand. Improvements or expansions to these facilities will be programmed through the City's Capital Improvement Program and budget, or the budgets of the service-providing agencies.

Measure C requires adoption of locally-determined performance standards, maintained through capital projects, for the following services:

1. Fire
2. Police
3. Parks
4. Sanitary Facilities (sewer)
5. Water
6. Flood Control.

Measure C states, "the performance standards should take into account fiscal constraints, and how the standards are to be applied in each jurisdiction's development review process." The purpose of this section is to comply with that

requirement, and to more fully integrate facility planning into the City's development review process.

This Element also includes a performance standard for stormwater drainage facilities to respond to federal requirements to control pollution in stormwater run-off.

B. Goals

The Preamble to this General Plan states, as a primary objective of all the General Plan Elements, to "provide a functional and compatible arrangement of residential, commercial, industrial, public uses, and open spaces." The performance standards in this Element are intended to help achieve this goal and the following goals:

1. Provide adequate service capacity in public facilities to support the provision of public services to existing and new development.
2. Develop facilities that meet specific identified needs, while placing strong emphasis on facilities that can adapt to the needs of changing activities and programs.
3. Coordinate City projects with plans of other agencies who could contribute to the success of projects in Hercules and surrounding areas.

C. Existing Facilities

1. Fire District Service: The Rodeo/Hercules Fire Protection District provides fire, emergency medical and related services in the City. The District provides primary response in the City from the station at 1680 Refugio Valley Road. This 3-bay station provides garage space for up to six fire engines/trucks. It also provides living and sleeping areas for three-person fire crews operating 24-hours-per-day. Facilities are provided for both male and female fire fighters. Back-up response is provided from the Rodeo station, which includes two equipment bays and living/sleeping accommodations for three person-crews.

The Hercules station was opened in 1991, and also serves as the headquarters for the District. It was designed and built by the City on City-owned land, and paid for with City and developer funds. The station is owned by the City and is leased to the District for \$1.00/year.

2. Police: Police service is provided by the Hercules Police Department. The Department operates out of the Hercules City Hall. Existing facilities include investigative and administrative offices, evidence storage, detention area, and related facilities. Police dispatch is provided jointly with the City of Pinole through the Pinole Police Department.
3. Parks: The City maintains one community and five neighborhood parks; and plans to develop a second community park. The community parks include Refugio Valley Park, and the planned Waterfront Park. Refugio Valley Park encompasses Refugio Lake and surrounding facilities (near the intersection of Refugio Valley Road and Pheasant Drive), the Linear Park, along Refugio Creek (on the north side of Refugio Valley Road), and the Community and

Swim Center (near the intersection of Refugio Valley Road and Redwood Road). These facilities encompass a total of 66.26 acres. The planned Waterfront Park is located along San Pablo Bay near the intersection of Railroad Avenue and Santa Fe. At present, it encompasses 7.14 acres, most of which is owned by the State of California and is leased to the East Bay Regional Parks District. The Land Use Element and Waterfront Park Plan (1984) call for expansion of this park along the Bay front. The five neighborhood parks encompass about 32 acres.

The City also maintains systems of trails and open space areas, distributed throughout the City. These open space areas encompass a total of approximately 950 acres. The open space areas and the City parks together account for approximately 1/3 of the total land area within the existing City limits. In addition, the homeowners' association for the Refugio Valley Ranch development also owns about 320 acres of permanent open space.

4. Sanitary Facilities (Sewer): Sewer treatment capacity is provided at two separate sewer plants. Most of the City's sewage is treated at the Pinole/Hercules Plant (which the City jointly owns with the City of Pinole), and a small portion of the sewage is treated at the Hercules Treatment Plant. In 1983, the City established an assessment district to fund an expansion of the Pinole/Hercules Plant. Through that assessment district, properties in Hercules are allocated approximately 2.0 million gallons per day (mgd) of treatment capacity. The City of Pinole also owns about 2.0 mgd of capacity, and operates the plant through a contract with the City of Hercules. In 1984-86 BioRad Laboratories rehabilitated the City's then-inoperative plant, in return for allocation of capacity of that plant. The Hercules Plant now treats approximately 0.30 mgd. Both plants provide secondary treatment, as required by State regulations. Treated effluent is pumped through a force-main and gravity flow system to the site of the Rodeo Sanitary District Treatment Plant. Here it is combined with effluent from the Rodeo Treatment Plant, and then discharged through a deep-water outfall into San Pablo Bay.
5. Stormwater Drainage: The City maintains stormwater drainage facilities in the incorporated area. Stormwater is collected and conveyed to existing creek channels or San Pablo Bay. City staff is preparing ordinances to implement federal National Pollution Discharge Elimination Systems (NPDES) requirements.
6. Water: The East Bay Municipal Utility District (EBMUD) provides water service in the City of Hercules. EBMUD's Maloney pressure zone provides services to properties up to an elevation of 200 feet above sea level. Water mains are extended, and new connections provided, when properties are developed. Water service above the 200-foot elevation cannot be provided from the Maloney pressure zone. In these areas, water service is generally provided by constructing water reservoirs to serve specific areas. Sufficient storage capacity is provided to accommodate both normal use and emergency water requirements.
7. Flood Control: Existing City ordinance requires new development to provide on-site flood protection (see Hercules Municipal Code Title 10, Chapter 7 (Flood Damage Prevention)). Flood Hazard areas are defined in this ordinance

according to designations on the federal Flood Insurance Rate Map, which is generally based on the 100-year flood.

D. Proposed New Facilities Improvements

1. Fire District Service: A new fire station is planned to serve properties in the City's Sphere of Influence. It will be designed to accommodate staff and equipment to serve these properties on a 24-hour, 7 day-a-week basis. It is expected to be similar to the new station on Refugio Valley Road (without the headquarters offices and facilities). This station will be designed and built by the City, and will be owned by the City and leased to the District. The new station will also provide enhanced back-up response to the Viewpoint section of Rodeo and eastern Hercules.
2. Police: A police substation is planned as part of the new fire station, discussed above. It will provide office space and equipment storage for officers patrolling the Sphere of Influence properties once annexation and development occur.
3. Parks: A new neighborhood park (about 10 acres) is planned for the Franklin Canyon Golf Course property; an additional neighborhood park may be located in one of the other properties in the Sphere of Influence, if needed, to serve new residences at those properties.

The Franklin Canyon Golf Course property is planned to include about 220 acres of open space, plus the existing golf course, which will be upgraded and will remain open to the public. On-site trails will connect to the regional trail system.

4. Sanitary Facilities (Sewer): The City is planning a new 2.0 mgd treatment plant to replace the existing Hercules plant. The plant will provide tertiary treatment to wastewater from properties within the City that did not participate in the 1983 assessment district, and from properties in the Sphere of Influence. Tertiary treatment will provide reclaimed water to replace potable water used at nearby refineries, and to irrigate landscaping at the Franklin Canyon Golf Course and thereby will minimize the net need for potable water at developing properties.
5. Stormwater Drainage: Existing stormwater facilities will be upgraded to meet NPDES requirements. At the Sphere of Influence properties, facilities will be incorporated into construction plans, and will be installed as part of property development.
6. Water: Facilities to provide adequate water service to undeveloped properties in the City and the Sphere of Influence, (including mains, service pipes and reservoirs) will be installed as part of property development. They will be designed to conform with EBMUD requirements, and will be funded by project sponsors.
7. Flood Control: Flooding hazards in the area west of San Pablo Avenue will be resolved by installing flood control improvements along Refugio Creek. These improvements will be installed prior to or as part of development of the

affected properties. In both the City and the Sphere of Influence, on-site retention will be incorporated into development plans, as needed, to avoid causing down-stream flooding during a 100-years storm.

E. Performance Standards for Capital Facilities

While Measure C requires the adoption of performance standards for capital facilities, it does not specify mandatory standards, or the format of these standards. Each agency's standards should reflect the ability of the agency to provide and maintain capital facilities, consistent with other uses of scarce revenues. The following paragraphs present the standards for the City of Hercules.

Changes in the City's fiscal situation (such as further revenue "take-backs" by the State) may require adjusting or reducing these standards in order to maintain a balance between funding for these capital facilities and funding for other facilities and services. The City would consider such revision through an amendment to this Element.

1. Fire District Service: Fire Station(s) shall be located in the City so that five minutes emergency response time may be achieved by first response units for 90% of all emergency calls. Fire Stations shall be sized to accommodate a minimum of two(2) engines/trucks and three-person, 24-hour crews.
2. Police: Office and supporting facilities shall be provided in a central, headquarters facility. Communication equipment (including repeater stations) shall be provided to allow communication between dispatch and police units throughout the service area.
3. Parks:
 - Neighborhood Parks: A minimum of 1.5 acres of neighborhood parks shall be provided for each 1,000 residents.
 - Community Parks: A minimum of 3.5 acres of community park space shall be provided for each 1,000 residents.
 - Open Space: A minimum of 40 acres of open space (public and private combined) shall be provided for each 1,000 residents.
4. Sanitary Facilities (Sewer): Capability to transmit and treat waste water from all residential and non-residential developments to standards set by the Regional Water Quality Control Board.
5. Stormwater Drainage: Meet federal NPDES requirements for stormwater run-off.
6. Water: Capability to provide potable water supply to all residential and non-residential developments.
7. Flood Control: All new structures shall be located outside the Flood Zones A & B as designated by the Flood Insurance Rate Map (prepared by the Federal Emergency Management Agency (FEMA)); or, insure that the finished floor elevation is at least 1 foot above the flood elevation as determined by FEMA.

Development of any property shall not significantly increase the flooding potential at downstream areas, or otherwise significantly impact or aggravate a flooding problem at downstream properties.

F. Implementing Policies and Programs

1. The City shall review all new development plans for conformance with the performance standards in this Element. The City will approve a development application only after making findings that one or more of the following conditions are met:
 - a. Assuming participation in adopted mitigation programs, performance standards will be maintained following the project occupancy; or,
 - b. Because of the characteristic of the development project, project-specific mitigation measures are needed in order to insure maintenance of standards, and such measures will be required of the project sponsor; or,
 - c. Capital projects in the Capital Improvements Program (or planned by service-providing special districts) will result in maintenance of a performance standards.
2. The City will establish and implement a development mitigation program to insure that new growth is paying its share of the cost associated with the maintenance of these standards.
3. The City shall require all new development to contribute to or participate in the improvement of the above-mentioned facilities and systems in proportion to the demand generated by project occupants and users.
4. Fees collected pursuant to these policies shall be deposited in special funds, and shall be used to support construction of improvements to the above-mentioned facilities/improvements, as programmed through the City's Capital Improvement Program and budget.

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The following goals are adopted for traffic operations in the City of Hercules:

1. The City shall maintain traffic operations on streets that are designated as "Basic Routes" at the standard described below. These goals replace the Level-of-Service policy in the Circulation Element (page 11, policy 2a).

2. The City shall participate in the West Contra Costa Transportation Advisory Committee regarding traffic operations on Routes of Regional Significance, and shall help meet the goals and service standards for these routes by implementing the Action Plans for those routes, as adopted by the City and Contra Costa Transportation Authority.
3. New development shall be required to pay its fair share of the cost of improving existing City streets so that compliance with the designated LOS is maintained.
4. New development shall be required to pay its fair share of the cost of improving regional routes so that compliance with the service standard specified in the Action Plan (when adopted) is maintained.

Additional goals regarding the City circulation system are contained in the Circulation and Scenic Highway Element.

D. Traffic Service Standards for Basic Routes (Local Streets)

1. Traffic operations on City Basic Routes shall meet the following standards.

LOS High-D to Low-E (maximum v/c ratio is 0.94)

- Sycamore Avenue (from Bayberry to San Pablo Avenue)
- Bayberry (from I-80 ramps to Sycamore)

LOS "High" D - (maximum v/c ratio is 0.89)

- Sycamore Avenue (SR-4 - Bayberry)
- Refugio Valley Road (Sycamore - Redwood/Falcon)
- Alfred Nobel Drive
- Linus Pauling Drive
- James Watson Drive
- John Muir Parkway

LOS "Low" D - (maximum v/c ratio is 0.84)

- All other Basic Routes (that is, except Routes of Regional Significance).

Compliance with these standard shall be determined through preparation of a traffic study for each proposed project that would generate 100 or more peak hour trips (morning or evening). This study would estimate the existing LOS and project the future LOS (seven years after scheduled project occupancy) at all signalized intersections that would be affected by the proposed project. (Arterial streets are shown on the Circulation Plan in the Circulation Element.) The calculation of the future LOS will take into account all existing, approved and proposed projects (for which entitlement applications are complete when the traffic study is begun) and all existing and programmed street and highway improvements.

At the intersection of Bayberry and Sycamore, a LOS range is established to require careful consideration of the benefits of a project that would cause the LOS to reach Low-E. Projects that would not cause an exceedence of LOS High-D would be reviewed through the normal process. Projects that could result in Low-E would require approval by the City Council. The City Council

could approve such projects if it finds that the project provides substantial benefit to the City or the community through either the creation of substantial jobs, creation of a substantial long-term revenue potential to support City services, or the provision of a substantial amount of affordable housing. Projects for which this finding could not be made would not be approved through this process.

2. Objectives and Standards for Regional Routes in Hercules will be included in the Action Plan for those routes, and will be incorporated into this Element upon completion and adoption.
3. Measure C allows for a "Finding for Special Circumstance" at intersections on Basic Routes where physical or environmental conditions make further improvements to the intersection infeasible or inappropriate. Such a finding is subject to ratification by the Contra Costa Transportation Authority. Approval of a finding for a particular intersection will include alternative mitigation; projects that will generate traffic that will impact such an intersection shall be required to implement or participate in the alternative mitigation.

E. Implementing Policies and Programs

1. The LOS standards in this Element will be used to evaluate the traffic impacts of new developments, and no application shall be approved which may cause a violation of these standards unless either:
 - a. Improvements that will mitigate the projected LOS impact are programmed in the City's or Redevelopment Agency's Capital Improvement Program; or,
 - b. A Finding of Special Circumstances has been made for the intersection; or,
 - c. Improvements will be made by a project sponsor as part of a project.
2. The City shall develop and implement a mitigation program to insure that new development pays its fair share of the cost of maintaining adequate operations on the Basic Routes and the Routes of Regional Significance.
3. As mentioned above, a traffic study shall be performed for any proposed project that may generate 100 or more vehicle trips during the morning or afternoon peak hour. This traffic study shall be prepared in compliance with the technical guidelines issued by the Contra Costa Transportation Authority, and shall be funded by the project sponsor under the direction of City staff.
4. Mitigation measures and conditions of project approval may include payment of fees to fund improvements on Basic Routes or Routes of Regional Significance. Fees for improvements to Basic Routes shall be deposited in a separate City Traffic Mitigation Fund. Fees for improvements to a regional route shall be handled in accordance with the Action Plan for the affected regional route.
5. Improvements to Basic Routes shall be programmed through the City's Capital Improvement Program.

6. Improvements to a Route of Regional Significance which are sponsored by the City of Hercules shall also be programmed through the City's Capital Improvement Program.
7. Improvements to a Route of Regional Significance that are not sponsored by the City of Hercules shall be programmed by the sponsoring agency, and may be acknowledged in the City's Capital Improvements Program.
8. The City shall continue to participate actively (at both the staff and the policy level) in the West Contra Costa Transportation Advisory Committee and the Contra Costa Transportation Authority. Participation in these agencies shall include, but may not be limited, to full implementation of adopted Action Plans for Routes of Regional Significance in order to promote acceptable traffic movement on these routes. In the event that problems/issues cannot be resolved through discussion among the affected parties, the City will participate in CCTA's conflict resolution process.
9. The City shall report annually regarding compliance with the Measure C Growth Management Program, or as may be requested by the Contra Costa Transportation Authority.
10. The City shall adopt and implement a Transportation Demand Management Program, including the required policies adopted by the Contra Costa Transportation Authority. Such a program may be jointly implemented in western Contra Costa County by the five cities and the County through the West Contra Costa Transportation Advisory Committee.

III. PERFORMANCE STANDARDS FOR CAPITAL FACILITIES

A. Introduction

The Preamble to this General Plan calls for development of a balanced community; this section states performance standards to define "balance" with regard to capital facilities. These facilities provide the physical basis for public services provided by the City, the Rodeo-Hercules Fire Protection District and the East Bay Municipal Utility District (water). These performance standards will be incorporated into the development review process, and will be used to insure that new development does not exceed the capacity of capital facilities for the six cited services without providing funding for improvements to accommodate the new demand. Improvements or expansions to these facilities will be programmed through the City's Capital Improvement Program and budget, or the budgets of the service-providing agencies.

Measure C requires adoption of locally-determined performance standards, maintained through capital projects, for the following services:

1. Fire
2. Police
3. Parks
4. Sanitary Facilities (sewer)
5. Water
6. Flood Control.

Measure C states, "the performance standards should take into account fiscal constraints, and how the standards are to be applied in each jurisdiction's development review process." The purpose of this section is to comply with that

requirement, and to more fully integrate facility planning into the City's development review process.

This Element also includes a performance standard for stormwater drainage facilities to respond to federal requirements to control pollution in stormwater run-off.

B. Goals

The Preamble to this General Plan states, as a primary objective of all the General Plan Elements, to "provide a functional and compatible arrangement of residential, commercial, industrial, public uses, and open spaces." The performance standards in this Element are intended to help achieve this goal and the following goals:

1. Provide adequate service capacity in public facilities to support the provision of public services to existing and new development.
2. Develop facilities that meet specific identified needs, while placing strong emphasis on facilities that can adapt to the needs of changing activities and programs.
3. Coordinate City projects with plans of other agencies who could contribute to the success of projects in Hercules and surrounding areas.

C. Existing Facilities

1. Fire District Service: The Rodeo/Hercules Fire Protection District provides fire, emergency medical and related services in the City. The District provides primary response in the City from the station at 1680 Refugio Valley Road. This 3-bay station provides garage space for up to six fire engines/trucks. It also provides living and sleeping areas for three-person fire crews operating 24-hours-per-day. Facilities are provided for both male and female fire fighters. Back-up response is provided from the Rodeo station, which includes two equipment bays and living/sleeping accommodations for three person-crews.

The Hercules station was opened in 1991, and also serves as the headquarters for the District. It was designed and built by the City on City-owned land, and paid for with City and developer funds. The station is owned by the City and is leased to the District for \$1.00/year.

2. Police: Police service is provided by the Hercules Police Department. The Department operates out of the Hercules City Hall. Existing facilities include investigative and administrative offices, evidence storage, detention area, and related facilities. Police dispatch is provided jointly with the City of Pinole through the Pinole Police Department.
3. Parks: The City maintains one community and five neighborhood parks; and plans to develop a second community park. The community parks include Refugio Valley Park, and the planned Waterfront Park. Refugio Valley Park encompasses Refugio Lake and surrounding facilities (near the intersection of Refugio Valley Road and Pheasant Drive), the Linear Park, along Refugio Creek (on the north side of Refugio Valley Road), and the Community and

Swim Center (near the intersection of Refugio Valley Road and Redwood Road). These facilities encompass a total of 66.26 acres. The planned Waterfront Park is located along San Pablo Bay near the intersection of Railroad Avenue and Santa Fe. At present, it encompasses 7.14 acres, most of which is owned by the State of California and is leased to the East Bay Regional Parks District. The Land Use Element and Waterfront Park Plan (1984) call for expansion of this park along the Bay front. The five neighborhood parks encompass about 32 acres.

The City also maintains systems of trails and open space areas, distributed throughout the City. These open space areas encompass a total of approximately 950 acres. The open space areas and the City parks together account for approximately 1/3 of the total land area within the existing City limits. In addition, the homeowners' association for the Refugio Valley Ranch development also owns about 320 acres of permanent open space.

4. Sanitary Facilities (Sewer): Sewer treatment capacity is provided at two separate sewer plants. Most of the City's sewage is treated at the Pinole/Hercules Plant (which the City jointly owns with the City of Pinole), and a small portion of the sewage is treated at the Hercules Treatment Plant. In 1983, the City established an assessment district to fund an expansion of the Pinole/Hercules Plant. Through that assessment district, properties in Hercules are allocated approximately 2.0 million gallons per day (mgd) of treatment capacity. The City of Pinole also owns about 2.0 mgd of capacity, and operates the plant through a contract with the City of Hercules. In 1984-86 BioRad Laboratories rehabilitated the City's then-inoperative plant, in return for allocation of capacity of that plant. The Hercules Plant now treats approximately 0.30 mgd. Both plants provide secondary treatment, as required by State regulations. Treated effluent is pumped through a force-main and gravity flow system to the site of the Rodeo Sanitary District Treatment Plant. Here it is combined with effluent from the Rodeo Treatment Plant, and then discharged through a deep-water outfall into San Pablo Bay.
5. Stormwater Drainage: The City maintains stormwater drainage facilities in the incorporated area. Stormwater is collected and conveyed to existing creek channels or San Pablo Bay. City staff is preparing ordinances to implement federal National Pollution Discharge Elimination Systems (NPDES) requirements.
6. Water: The East Bay Municipal Utility District (EBMUD) provides water service in the City of Hercules. EBMUD's Maloney pressure zone provides services to properties up to an elevation of 200 feet above sea level. Water mains are extended, and new connections provided, when properties are developed. Water service above the 200-foot elevation cannot be provided from the Maloney pressure zone. In these areas, water service is generally provided by constructing water reservoirs to serve specific areas. Sufficient storage capacity is provided to accommodate both normal use and emergency water requirements.
7. Flood Control: Existing City ordinance requires new development to provide on-site flood protection (see Hercules Municipal Code Title 10, Chapter 7 (Flood Damage Prevention)). Flood Hazard areas are defined in this ordinance

according to designations on the federal Flood Insurance Rate Map, which is generally based on the 100-year flood.

D. Proposed New Facilities Improvements

1. Fire District Service: A new fire station is planned to serve properties in the City's Sphere of Influence. It will be designed to accommodate staff and equipment to serve these properties on a 24-hour, 7 day-a-week basis. It is expected to be similar to the new station on Refugio Valley Road (without the headquarters offices and facilities). This station will be designed and built by the City, and will be owned by the City and leased to the District. The new station will also provide enhanced back-up response to the Viewpoint section of Rodeo and eastern Hercules.
2. Police: A police substation is planned as part of the new fire station, discussed above. It will provide office space and equipment storage for officers patrolling the Sphere of Influence properties once annexation and development occur.
3. Parks: A new neighborhood park (about 10 acres) is planned for the Franklin Canyon Golf Course property; an additional neighborhood park may be located in one of the other properties in the Sphere of Influence, if needed, to serve new residences at those properties.

The Franklin Canyon Golf Course property is planned to include about 220 acres of open space, plus the existing golf course, which will be upgraded and will remain open to the public. On-site trails will connect to the regional trail system.

4. Sanitary Facilities (Sewer): The City is planning a new 2.0 mgd treatment plant to replace the existing Hercules plant. The plant will provide tertiary treatment to wastewater from properties within the City that did not participate in the 1983 assessment district, and from properties in the Sphere of Influence. Tertiary treatment will provide reclaimed water to replace potable water used at nearby refineries, and to irrigate landscaping at the Franklin Canyon Golf Course and thereby will minimize the net need for potable water at developing properties.
5. Stormwater Drainage: Existing stormwater facilities will be upgraded to meet NPDES requirements. At the Sphere of Influence properties, facilities will be incorporated into construction plans, and will be installed as part of property development.
6. Water: Facilities to provide adequate water service to undeveloped properties in the City and the Sphere of Influence, (including mains, service pipes and reservoirs) will be installed as part of property development. They will be designed to conform with EBMUD requirements, and will be funded by project sponsors.
7. Flood Control: Flooding hazards in the area west of San Pablo Avenue will be resolved by installing flood control improvements along Refugio Creek. These improvements will be installed prior to or as part of development of the

affected properties. In both the City and the Sphere of Influence, on-site retention will be incorporated into development plans, as needed, to avoid causing down-stream flooding during a 100-years storm.

E. Performance Standards for Capital Facilities

While Measure C requires the adoption of performance standards for capital facilities, it does not specify mandatory standards, or the format of these standards. Each agency's standards should reflect the ability of the agency to provide and maintain capital facilities, consistent with other uses of scarce revenues. The following paragraphs present the standards for the City of Hercules.

Changes in the City's fiscal situation (such as further revenue "take-backs" by the State) may require adjusting or reducing these standards in order to maintain a balance between funding for these capital facilities and funding for other facilities and services. The City would consider such revision through an amendment to this Element.

1. Fire District Service: Fire Station(s) shall be located in the City so that five minutes emergency response time may be achieved by first response units for 90% of all emergency calls. Fire Stations shall be sized to accommodate a minimum of two(2) engines/trucks and three-person, 24-hour crews.
2. Police: Office and supporting facilities shall be provided in a central, headquarters facility. Communication equipment (including repeater stations) shall be provided to allow communication between dispatch and police units throughout the service area.
3. Parks:
Neighborhood Parks: A minimum of 1.5 acres of neighborhood parks shall be provided for each 1,000 residents.
Community Parks: A minimum of 3.5 acres of community park space shall be provided for each 1,000 residents.
Open Space: A minimum of 40 acres of open space (public and private combined) shall be provided for each 1,000 residents.
4. Sanitary Facilities (Sewer): Capability to transmit and treat waste water from all residential and non-residential developments to standards set by the Regional Water Quality Control Board.
5. Stormwater Drainage: Meet federal NPDES requirements for stormwater run-off.
6. Water: Capability to provide potable water supply to all residential and non-residential developments.
7. Flood Control: All new structures shall be located outside the Flood Zones A & B as designated by the Flood Insurance Rate Map (prepared by the Federal Emergency Management Agency (FEMA)); or, insure that the finished floor elevation is at least 1 foot above the flood elevation as determined by FEMA.

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Development of any property shall not significantly increase the flooding potential at downstream areas, or otherwise significantly impact or aggravate a flooding problem at downstream properties.

F. Implementing Policies and Programs

1. The City shall review all new development plans for conformance with the performance standards in this Element. The City will approve a development application only after making findings that one or more of the following conditions are met:
 - a. Assuming participation in adopted mitigation programs, performance standards will be maintained following the project occupancy; or,
 - b. Because of the characteristic of the development project, project-specific mitigation measures are needed in order to insure maintenance of standards, and such measures will be required of the project sponsor; or,
 - c. Capital projects in the Capital Improvements Program (or planned by service-providing special districts) will result in maintenance of a performance standards.
2. The City will establish and implement a development mitigation program to insure that new growth is paying its share of the cost associated with the maintenance of these standards.
3. The City shall require all new development to contribute to or participate in the improvement of the above-mentioned facilities and systems in proportion to the demand generated by project occupants and users.
4. Fees collected pursuant to these policies shall be deposited in special funds, and shall be used to support construction of improvements to the above-mentioned facilities/improvements, as programmed through the City's Capital Improvement Program and budget.

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